THE

SOUTHERN AGRICULTURIST.

SEPTEMBER, 1836.

PART I.

ORIGINAL COMMUNICATIONS.

On the improvement of the Population of the Southern States.

Greenville, August 21, 1836.

Mr. Editor,—As attention is now directed to the growing crop, and not to experiments in the preparation of the soil, &c. which would occupy more of your time and space, I think it not unlikely you may spare me a corner in your valuable register. The subject I wish to bring under serious and general consideration, it is true is not agricultural, but it is so intimately connected with that important interest, I feel persuaded, a work devoted to its advancement, may appropriately give it to the public. I throw the following crude ideas together, with the hope of concentrating public attention upon a point of vital importance to all the slave-holding States, and of rousing minds of greater compass than my own, to the investigation of the matter, and to the determination of an appropriate adjustment of it—one most feasible, while most effective. It has been said in a tone not to be misunderstood, that southern institutions shall be maintained at any, and every hazard. This is well and I respond a hearty *Amen*. We have determined things shall remain as they are; that is, we have resolved our population shall ever continue to be composed of the *whites*, the *free-coloured* and the *slaves*. So far well. But in my opinion much remains for us to do. The condition and rights of

each class should be carefully ascertained by the legislature, and then declared the *unchangeable* law of the land. Establish a system, well and wisely adjusted, and let not the legislature touch it, but under circumstances of uncompromising necessity. Scarcely a session passes without legislating on the subject of our coloured population. This is radically wrong, and serves only to foster a spirit of discontent. Annually their anxieties are awakened, when by placing before them *certainty*, we would give them quietude. A man may school himself to the endurance of any lot, but amidst "shifting scenes" he knows not what to expect, and is therefore miserable. I am not of the school of puling philanthrophists who consider slavery an evil, but I would render that condition as happy as possible; and that also of the free coloured population. We should conciliate their affections by unvarying kindness, by enlarging their sum of rights, and by restraining them as little as may be consistent with a sound policy. The first and principal step towards this desirable consummation, I conceive is to secure to the males, an *exclusive* interest in the affections and society of the females, appropriate to their respective conditions. This is not now the case. A different order of things prevails. True, it is not sanctioned by law, but it is the result of a custom, so common and so strong, that nothing short of a severely penal statute can put it down. The fruits of this custom are to be seen in the numbers of coloured (or mixed) children which crowd the streets of southern cities and towns. This is an evil and its march is onward. It is obvious to the most careless observer, that the mixed children increase in number much more rapidly than those which are unmixed. This is so easily explained, I shall not dwell on the subject. But this is an evil for which a remedy must be sought—the sooner ascertained and applied the better. The shameless commingling of colours is to the males of both coloured classes, a prolific source of aggravated discontent, and of undying hatred of the superior class. For this, it has been said by some, there is no remedy—by others, two have been suggested, effectual enough, but in my judgment severe, if not absolutely unjust. There is I think another, which without disturbing the right of property, or looking to the extinction of any class, will be productive of the happiest results—and that too, without trenching on the just rights of any

individual, unless, indeed restraining the wrong doer be construed into a violation of rights. The scheme is original, at least, I have never read or heard any thing analogous, and it is with much diffidence I propose it. Seemingly the publication involves some indelicacy, but it is unavoidable if it does, and can only offend a "mawkish sensibility." We need not blink the matter, it is an evil which we must look in the face, and which soon or late must be ended by legislative enactments. It is easier to uproot the tender shrub, than the sturdy oak, and so with this blot on our 'scutcheon—far easier is it to be removed now, than it will be a century hence. The plan I submit, is that the legislatures of the slave States should divide their population into three classes, or *castes;* the

First—Composed of the whites; the
Second—Composed of the free-coloured; and the
Third—Composed of the slaves.

The condition of the second caste should approximate as nearly as practicable that of the first. To attach them to that caste (that is the 2d to the 1st) it is all important to make their interests nearly identical. While the condition of the second caste is improved and made more respectable, the third should receive the kindest consideration, and instead of abridging their liberties, they should be extended to the *utmost verge* of safety. Win the confidence of both the inferior classes—teach them to honour and love, rather than fear their superiors. A sure means of effecting this to a very great extent, is to prevent all connexion between the sexes of different castes. Such a law would be hailed by the coloured males as a boon from heaven—and whom would it harm? Would any white man avow himself injured by it? No. Then it follows as unerringly, as effect follows cause, that no one will or can be injured—none will suffer, except violators of the law, as in other cases. "*Loosing caste*" should be the penalty for sexual intercourse between individuals of different castes. The first should be degraded to the rank and condition of the second, and the second to the rank and condition of the third caste. Such should be the law, and such the punishment. Every one privy to a violation of the law and concealing it, should be declared accessory to the offence, and be punished by fine, imprisonment, &c. That incalculable benefit would result from

such enactments I think cannot be doubted. Individuals would be restricted to their respective castes, and so long as they do not offend against the provisions of the statute, they would only know its *existence*, from perception of its beneficial operation. It cannot be doubted the first effect of such a law would be to gladden the hearts of all the coloured males, the bond and the free. Each of those castes would feel, aye *feel* they had acquired rights—a trespass upon which, would be followed by signal punishment. Would they not rejoice—and with much reason? As it cannot be shown the first caste would be prejudiced in any respect, I will state some of the beneficial effects of the law.

In the first place, it cannot be denied the certainty of having uncontaminate posterity, would be an unfailing fount of high gratification to parents. This I consider a great advantage, but shall not enlarge upon it; your readers all know, it is one better referred to the imagination, than discussed. Another effect operating happily upon the first class, would be the promotion of marriage among its members. A necessary consequence is an increase of the white population, and a corresponding benefit to the country generally. It cannot be necessary to show how or why, such a law would increase the number of marriages among the whites, as your readers will readily perceive, by what course of reasoning I arrive at my conclusion. Decrease in the births of mixed children (whether their mothers be free or bond) will follow the increase of marriages and births among the whites, as surely as air is essential to existence. From the day such a law becomes operative, the coloured females would look for "help mates" within their respective castes. The female slave would as now, be thoughtless of the propagation of her kind, for then as now, her offspring would be the charge of her owner. Among them there would be no decrease of births, but most probably the reverse. Not so with the free coloured female. No longer a wanton, but virtuous from necessity, she too, will seek a "help mate" among her own class. Instead of living herself, and supporting her progeny upon the wages of sin, she will be compelled to subsist, as many of our ladies do—by honest industry —and to do as all our prudent white girls do—marry such as will be a "help mate" in fact, as well as appearance. As the offspring would be reared at the expense of the

parents, it is clear marriages would be prudently contracted, and it would very soon become (in proportion to numbers) quite as common to see coloured "old maids," (at present a non-entity) as it is to find white ones at this time. The free females being restricted in their intercourse with the opposite sex, and confined to their own caste, will (not having the same pecuniary assistance or support from relatives) marry less frequently, and consequently increase more slowly than the whites instead of multiplying as they now do, more rapidly than any other class in the Union. While, *at least*, as liberal as the slaves in producing children, they probably lose *much fewer* than either of the other castes, fewer certainly than the whites. Hence the great increase of our mixed population. Unchecked, the mixed children of free, and slave females, will soon be as numerous as those of the whites, and in the process of time the whites in reference to them, will be a small minority. While in advance of them, keep so, by encouraging marriage among the whites, and subjecting the others to such legal restraints upon the commerce of the sexes, as will enforce sound morals, and prevent undue increase of their numbers. Make it incumbent on the father of an illegitimate free coloured child to support it; if he absconds, make it a charge upon the free persons of colour in the district or parish, the residence of the absent father.

He that contemplates the future, will admit something must be done, to abate, if not entirely remove this evil. The question then is—what are we to do? If the plan here submitted is rejected—what other will you substitute for it? Will you adopt the savage expedient of Ohio, of Texas, and banish all the free coloured people from your territories? I trust not, (much as I should rejoice were there none in the State,) for I should consider their *banishment* as foul a blot, as *begetting* them. But pursue that course—and I would ask whither *could* they go? "Echo answers—where?" But one other remedy presents itself to my memory—a tedious, legal extinction of the whole mixed race. I have heard two means of effecting this suggested, but I shall not name either. It appears to me the arguments are all in favour of *establishing castes* with impassable boundaries. Such a statute will insure the permanent safety of our institutions, will be perfectly consistent with humanity, and will mete out justice to each

and every class; a recommendation which the other schemes cannot bring to their aid. If this communication should have the effect of *fixing* public attention upon a matter of such vast import to the South, my highest hope will have been gratified. Whether or not, my obligation to you will not be varied, and shall never be forgotten.

Your obedient servant,
LOOK-A-HEAD.

We present our readers the commnnication of "Look-a-head," simply because any proposition affecting our domestic relations so seriously, must incidentally at least, operate upon Southern Agriculture.

While we commend the writer's zeal in support of our peculiar institutions, and cheerfully accord him the quantum of our journal he solicits, we would have it distinctly understood—we are not thereby pledged to yield our approbation to his, or *any* other scheme of legislative interference. That the subject merits consideration does not seem to admit of doubt, but what remedy, if any, should be essayed, we are not prepared to determine, and, therefore take leave to refer it to the action of those, who have our well being in their keeping.—*Editor.*

Reply to "Beaufort," on Planting Largely.

Orangeburgh, July 8, 1836.

Mr. Editor,—Seeing in your invaluable magazine, (for July, p. 342,) "Beaufort" has given some practical hints on planting largely to the hand. All this is very well, where plantations have been for a series of years, under judicious and skillful management on the part of the proprietor and overseer. I will take for example a certain section in St. Matthew's Parish, and show the result. Many planters cultivate from eight to ten acres of cotton per hand, and this is done with neatness. The above number of acres, has for the last four or five years averaged from fifteen to eighteen hundred pounds of ginned cotton, *per hand.* They tend from 4 to 4½ acres of corn, and half an acre of potatoes, making their entire crop about fifteen acres per hand. *(Quere.)* Would Beaufort call this planting largely? Why do the planters of St. Matthew's plant larger, and make more to the hand than planters

elsewhere? Is their land better—or is their system superior? (Let St. Matthew's answer.) "Beaufort" seems to hold with the six acre experiment—and ought to do so, for giving it as my opinion, it is four acres less than a full crop, (speaking of upland) where there is a sufficiency of animal power, or one horse to every five hands, and where business is conducted systematically. As a general rule, he who works without system, works to a disadvantage. The pencil should always precede, for he that prepares not to-day for to-morrow, will find himself confused, and he that is frustrated will do useless labour.

I fully concur with "Beaufort" on the ploughing system. I too agree, planters should be advised by their own eyes, unless they are like some of our collegians, that have just returned from their studies, with full purses and empty heads. In such cases they would do well to employ overseers, that know their business and would do it too! Not such as I had the misfortune to find last spring near Beaufort, and made his head quarters in front of the negro houses, in a small cabin not unlike an Indian wigwam—at the sight, a humane individual would shudder. I had the mortification of calling on one of this fraternity and asked admission for the night. After whooping and hallooing awhile—out popt a something not unlike the Cock-lane ghost of old. Mr. Editor, what was my feeling on that occasion? The most melancholy forebodings pervaded every nerve. Pale and meagre was this wretched being! I looked with wonder and surprise on this object of pity. His appearance was forbidding, and put me in mind of the poor Irish wag, who after murdering and robbing till detected, fled to the wild shades of the Pee Dee river, and subsisted eight months on red potato slips and butter milk, furnished by his niece. To entertain a traveller he could not, he had not the means, and likewise was debarred by his employer Mr. ****, a just man 'tis thought for that section of country. He stated, as it seemed in good earnest, that he subsisted on plantation fare. *(Quere.)* What was the plantation fare? *(Quere.)* Is these the sort of overseers "Beaufort" alludes to; where he takes it as a general rule that every overseer would object to his scheme of planting largely to the hand? If it is, he may justly do so, seeing such language used, and injustice on this class of our population, where every simpleton who has completed his studies—and has a few gold

coins in his purse, is showering down abuses on this devoted class! 'Tis enough to make every honest man forsake and abandon the idea of ever managing in a course of life, that will degrade him in the eyes of the community at large. Was "Beaufort" ever in St. Matthew's? If he were not, he had as well go and judge for himself, if every overseer objects to planting largely. *(Quere.)* Has "Beaufort" an overseer of his description, or has he none at all? If he has an overseer, pray what wages does he give, or whether he gives any? When he gives this information and it gets abroad, perhaps, "Beaufort" will find an overseer that would not wish more than fair indulgencies, at least, (to use Mr. W. B. Seabrook's appellation) he might intrust his plantation to some needy wanderer, who without morals, education, or general worth, would assume a business of which he was at once incompetent, &c.

Mr. Editor, may success attend your labours, and may all receive a share of information with

FUNDY.

On Systematic Planting.

Santee, August 10, 1836.

Mr. Editor—I noticed, in your number for this month, a communication from a gentleman in Georgia, which merits the special attention of the planters in this State. Nothing will be hazarded in saying your Georgia correspondent is clear of debt, or is, at least unembarrassed. And why? Simply because he is a systematic man. He keeps a book, which presents at one view, his annual receipts and disbursements; and he is thus enabled to determine his operations for the ensuing year. By means of his book he acts understandingly, and should the seasons not war against him, he will never leave his black-smith, his carpenter, his overseer, his merchant, his butcher, &c., unpaid. Such men want no advances from their factors. It is a good example, and should be industriously followed. Let it be done, and we shall hear no more of planters ruining themselves and others. I notice, too, your Georgian contemplates the culture of the Vine. This is as it should be. The Southern States can, if they will, be the richest and happiest portion of the earth. We want but energy and enterprize to develope our re-

sources. In the same number the "unparalleled enterprise" of this State is spoken of, but in my humble opinion, much remains to be done before we can justly pretend, to so large a meed of praise. Something more than projecting rail-roads, and producing the best rice and cotton, must be effected, ere we can consider ourselves competitors of the North. Their enterprise is indeed without parallel—*they* neglect no means of increasing their wealth. They purchase nothing they can produce, while we rely upon *two* staple articles, and purchase their cup tubs, their corn-brooms, their turnips, their beets, their beans, their cabbages, their hay, their butter, their onions, their cheese, their beef, their pork, their poultry, their soap, their starch, their cider, their beer, their pots, kettles, pans, and tin-ware, and heaven knows how many more of their "notions," but certainly a great many others, "too tedious (as the retailers say) to enumerate." Now, Mr. Editor, I believe you will agree with me, that, with a proper degree of enterprising industry, the Southern States can produce, and as cheaply, almost every article supplied us by the North. Their soil yields nothing that our's will refuse to us, yet we are content to be dependent on them, for most of the necessaries of life. Let us secure these to ourselves first, and then turn our attention to luxuries—to the wants of other people, of other lands. By adopting and closely adhering to the system of your Georgia correspondent, our planters, farmers, &c. will find themselves free of debt, and possessed of means to make experiments—to strike out new roads to fortune and independence. Every branch of business was in the beginning an experiment. Was it not so with rice and cotton? Every successful attempt to produce a specific article, will be an incitement of many others, till at length the quantity will establish it a staple of the State, and constitute it another and a strong arm of commerce. Like the centiped, we can throw out a hundred legs, why, then, should we crawl upon two? Much money is spent in travel—in search of *eclat*—not health—nor yet knowledge, and is, therefore, as essentially lost to the State, as if the amount had been engulphed in the "vasty deep." Let there be an end of this. Appropriate the funds (annually thrown away upon unprofitable journeyings to and fro) to the encouragement of

ingenious and industrious artisans at home, and to skilful experiments in *every* branch of husbandry, and a new order of things will arise. When Southern capital is so directed, the sun of *permanent prosperity* will pour its enlivening rays upon and around us—*but not till then.* Praying the speedy approach of that happy period, and that your useful journal may prosper to the extent of your wishes,

I remain, dear sir, your obedient servant,

D. TRYALL.

Resuscitation of a crop of Red Clover.

Pendleton, August 12, 1836.

Mr. Editor,—I some years since stated a fact, as to the resuscitation of a crop of red clover—(see vol. 1, pp. 330, 398 of the Southern Agriculturist)—you will say here is Monsieur Tonson come again. Yes, the clover has revived again, and after a lapse of eight years, I again state the fact with the circumstances.

It is said that those who write most for agricultural works are the worst practical farmers, and it may be so. This imputation doubtless prevents many useful hints from being published. I do not profess to be a good planter, yet I think I understand the theory at least, as well as most men with twenty years experience.

But I am not about to boast of any great achievement, such as one of your correspondents states, of having discovered how to make corn grow without work. I merely mean to say that nature has given me a hint which I deem valuable, and which I am desirous that your readers should profit by. Planting is a science, studying the elements, and the different modes of bringing them into the greatest possible use, in adding to the comfort and wealth of the country, is the philosophy. But the mere every day routine mechanically practiced, without reflecting, or being capable of reflection on the *why and because*, is clod-hopping. Those who read and write only, have the least time for practical observation, and on the other hand, those who are compelled constantly to labour, have not time to read and write. The combination of both is the most useful. The man of leisure and observation can point out the defects of his neighbour who has neither; and recommend such improvements or

alterations as his observation, or research may have suggested. These alterations may be carried too far, they should be the result of gradual and sufficiently protracted experiments, through different seasons, and on a small scale, to test fully their utility; and extended or abandoned, as the case may be.

The misfortune of those who write a good deal is, that they mount a favourite theory, and with a *cacæthes scribendi* for a whip, ride it to death before they stop, and if they do not kill, they are likely to bring to starvation a great many who are credulous enough to practice it.

But to the clover, "yes, Sir, the clover." Three years since having a good crop of potatoes in the same field, without a division fence, after gathering as many as I wished, turned the hogs into them. After eating out the potatoes, they fell on the clover and rooted it all out, as I supposed. Having no prospect of a crop of clover, I ploughed the ground up thoroughly; it broke into large clods, of course, from having lain out several years, added to the adhesion of the clover roots. It was ploughed twice crosswise, then planted in cotton. The next year it was again broken up twice, and put in cotton again; last season it was sowed in rye, broadcast, the growth was luxuriant, but owing to the excessive rains when it was in bloom, the grain was defective. On cutting the rye, judge my surprise, to find that the clover was growing finely, and much thicker than that which was sown last spring near it. If this fact of the seed sown *twenty years* since, and never renewed, but continuing to grow in spite of cultivation, does not conclusively shew that red clover can be successively cultivated in our climate, contrary to the received opinion, our people are more incredulous than I suppose them to be—at all events, I would say, let them try it before they come to a conclusion, not warranted by the facts. Here is no visionary theory, but a simple effort of nature urging them to take advantage of it.

Speaking of credulity, a little anecdote occurs, which I heard lately from an eye witness. A celebrated methodist preacher made an appointment to preach at a certain place, a goodly audience was of course assembled. But from some unforeseen circumstance, the appointed clergyman could not attend. A man got up and said, *God* had said that he must not preach, but as their bro-

ther had not come, rather than they should be disappointed, with their permission he would make an effort. He did so, and I suppose acquitted himself about as well as most of them. This may appear a digression, but I think the application will be found not out of place.

This anecdote will also apply to the Nornthern abolitionists, but for a very different reason to that given by our preacher, who looked more into physical causes than they do. They say that white men are equally well fitted to till the earth in tropical climates with the African. Now, I say, that God has said, reasoning from analogy, that the white man cannot possibly, from physical organization, grow cotton or rice with his own labour, to any thing like the extent to which they are cultivated. History tells us that the white man is incapable of enduring labour under a tropical sun, where he does exist, he is enervated, and totally unfit for great and continued bodily exertion. On the contrary, the African not only bears the heat of the sun with impunity, but endures for a very long period. The reasons for this difference are given by philosophers in full. From which, I think, it is evident that the negro and the mule are indispensable to the cultivation of cotton, rice and sugar, as these staples can be only grown profitably in very hot climates. This then being the decree of God, or of nature, which I deem the same, it is perfect folly, nay worse, unchristian, to attempt to controvert it. But I am getting into the abolition question, which is not much out of the way at last, for it is the all absorbing topic, and intimately connected with our agriculture.

JOHN E. COLHOUN.

Beet Sugar.

Mr. Editor,—I am pleased to see you have introduced the article at the head of this communication, to the notice of the Southern people. The North is alive on the subject so much so, we can scarcely lay our hands on a periodical from any section of that region, that does not urge its readers forward, to the production of this necessary of life—for home consumption, if not for exportation. Shall we be idle? Forbid it enterprise! Producing sugar from the beet root can no longer be consi-

dered problematical. The experiment has been eminently successful. At this moment, almost all Europe is directing attention to this branch of business. Already such is its advancement in France, the legislature of that kingdom deem it necessary to protect the sugar produced in their dependencies, by taxing that made at home. Without this aid, it is asserted the West-India sugar can not compete with that extracted from the beet. We have every advantage of soil and climate—we want but enterprise to add another great staple to our commerce, and become one of the most wealthy and independent States in the Union.

Mr. Editor, I may trouble you again on this subject—my present object, being only to offer you my feeble aid in bringing its important demands under consideration.

A. Z.

Beet Root Sugar.

In Leitch Ritchie's Description of Russia, 1835, is an account of the "exposition of National Manufactures," and among other things the following paragraph occurs.

"Another article of vast importance is beet root sugar. 'The loaves were among the whitest and most beautiful 'I had ever seen; and it is said that in Russia the root 'gives ten per cent. more syrup than in France. *As yet 'bankruptcy has been the lot of speculators in the manufacture* '—a fate which frequently attends the forlorn hope in 'such great enterprises. Correcting the errors, how-'ever, and benefiting by the experience of their prede-'cessors, it is to be confidently expected that a different 'destiny will attend those who now follow, and that beet 'root sugar will be very soon enrich both the grower and 'the country. Even now it is sold at three rubles in the 'pood (thirty-six English pounds) cheaper than West-'India sugar."

N. B. A ruble is about 73 cents.

On the Gama Grass and Vine.

Camden, August 10, 1835.

Mr. Editor,—A friend of mine, knowing the deep interest I take in the improvement of our Southern country, sent me the August number of your valuable periodical, containing a notice of "*The Gama Grass.*"

If our planters and farmers generally, were aware of the value of that grass, I am confident they would be grateful to you for all the information you could give them on the subject. Mr. William B. Meares, of North-Carolina, one of our most intelligent, active, and practical men in the South, has written much on this subject, from his own experience and observation.

All his statements concur with the remarks of Mr. James Shannon, to shew that, to the Southern planter, the *Gama Grass is invaluable.*

In April 1833, Mr. Robert Witherspoon, of Sumter District, pointed out to me a very prolific grass, growing in a part of his garden. He was unacquainted with it, and knew not its origin. Having read Mr. Meares' observations, some little while before, it struck me, from its appearance, that it was the Gama Grass. I accordingly brought a bunch of it to Camden, divided it into five parts, and planted each *four feet apart.* In the fall of the year such was their growth that they met, covering the intermediate space. The last spring I planted some volunteers, that had come up from the seed. Each afforded a small, single stem. At this time some of these measure two feet in height, and two feet round, and have twenty-six stalks. From a careful cultivation of even a few bunches, any one may, in two years, or three at most, cover two or three acres with this valuable grass.

Grafting the Vine.

To such as your readers as take an interest in cultivating the Vine, the following facts may be valuable, if not new. In March last I received a few cuttings of the bland Madeira grape. These were planted in the ground, and kept there until the bud began to swell. They were then grafted on other vines of a different sort. They all grew well, and are now (August 10th) from eight to twelve feet in length, and two of them have borne, *each, two bunches of grapes.* Each cutting had two eyes only, and but one of them was suffered to grow. The process of grafting is very simple. The vine forming the stock was cut off a half inch below the surface of the earth, and split in half with a common knife. The cutting, sharpened in the wedge form, was then inserted on the outer edge; and in one instance two cuttings were inserted in the same stock. A handful of swamp mud was then

pressed round the stock, and the dirt drawn up over it. This is assuredly the most speedy method of propagating the Vine, with which I am acquainted. The second year you have thus a fine stock, which, cut down to three or four eyes, affords you a good bearer. The only care required in the above process, is to graft your cutting when the bud begins to swell.

Should you deem the above of any value, Mr. Editor, give them a corner in your valuable paper. They are written from a filial regard to my own native

SOUTH.*

Our Southern Planters' interests considered.

Pineland, August 16, 1836.

Mr. Editor—While the South indicates a disposition to shake off the lethargy which, like a spell, has so long enthralled her, and to put forth her energies like a lion just roused from his slumber, permit me to invite the attention of planters and farmers, to some more certain, though more humble means of acquiring wealth, than constructing magnificent hotels, steam boats, rail roads, and packet ships. All these projects require capital, and not a little. With these things, I should say, agricultural men have nothing to do. They belong to merchants, stock-brokers, and others having surplus cash capital. Agriculturists should employ their gains in the improvement of their estates; introducing and testing experiments for augmenting the quantity, and improving the quality of what they produce for market, and in evolving the capacities of our soil and climate for naturalizing the productions of foreign countries. This is their proper fort; and when they step without it, they plunge into troubled waters, where they may perish. Suppose a planter to invest fifty thousand dollars in stock, which pays him semi-annually a dividend of five per cent. He has a planting interest worth at a fair cash price three hundred thousand dollars, but from diversion of capital and division of attention, the interest received from it declines from seven to four per cent. Does the extra interest from stock reimburse him? Or does it compensate the community for the loss of his exertions and experience, in developing their means of competing suc-

* The above was written last year, and was intended to be sent for publication, but was mislaid.

cessfully with their neighbours, and with distant countries? I apprehend not, but those who fancy they have spare means, will "gang their own gait." Those o'ergorged with wealth, will not deem the following promptings worthy their notice; but as they can be acted upon by the smallest farmer, as well as by the most extensive planter, I would fain hope my feeble efforts may not prove utterly valueless. I shall at present ask notice for only such vegetable productions as I know, beyond question, can be advantageously cultivated in the Southern States to any extent—for domestic purposes or for exportation—and most of them with *very small* capital. I will bring these matters to view, in the order they occur to my mind.

INDIGO

Is made from the *riadigofera tinctoria.* The Spanish indigo is said to be the best in the world, but it is in fact American, being produced in the province (now State) of Gautemala. Formerly it was made in this State for exportation, but gave place to cotton. The latter is so generally cultivated now, that attention may be very profitably directed again to indigo. When we abandoned the cultivation of it some years past, there was comparatively a small demand for it, in this country and Europe. A vast proportion of the goods coloured with that dye, was imported from the East-Indies; consequently the market for American indigo was extremely limited, and the planter gladly turned his attention, to an article promising as good returns, and more ready sale. It was certain that cotton manufactories were rapidly progressing in Europe, and would consume all we could supply them. We had no glut to fear; consuming their fabrics, it was but natural they should give our raw material the preference. It is easy to overstock a market with dye stuffs, but difficult to do so with the matter to be coloured. This led to the abandonment of indigo, and now this country has to import large quantities for home consumption. We have now a home market for the article, with a daily increasing demand. The coarse goods we formerly imported from the East Indies we no longer see. We substitute European and American fabrics, which fabrics absorb vast quantities of colouring, and cause a consumption of indigo unknown in Europe and America, when that dye occupied the attention of our planters. The supplies drawn in those days from North and South

America, have dwindled down to almost nothing. The United States produce *none*, and the unsettled state of the countries formerly under the Spanish and Portuguese governments, must for many years to come, render supplies from that quarter both *partial* and *precarious*. It is evident, that while the demand for indigo on both sides the Atlantic is immensely greater than it was fifty years ago, the supplies from all countries upon that Ocean north of Cape Horn, are diminished in the same ratio. As a home market is open for *large* quantities, I cannot but believe, many would find it to their advantage to substitute indigo for cotton. *Many* years, must elapse before we can produce more than a sufficiency, for home consumption, and again become exporters. The supply of our own market is, I think, a sufficient inducement to cultivate the plant. "The seed may be sown at all 'times, but spring is the best, and the species named in 'this communication makes the best indigo. It should 'be planted in good smooth soil, well tilled and not too 'dry, in furrows about six inches wide, two inches deep, 'and twelve apart. It must be kept clear of weeds. 'The plant ripens in about two months. When it begins 'to flower, cut it with pruning knives, and again every 'six weeks if the weather should be a little rainy. After 'two years it degenerates, and must be plucked up. The 'leaves and small branches should be gathered with great 'care, to avoid shaking off the farina that lies on them, 'which is very valuable. Throw them into a large tub, or 'vat with water, for fermentation, which will be complet 'ed in twenty-four hours at most. By means of a cock or 'spigot, draw off the water into another tub or vat, called the 'mortar, or pounding tub. The steeping (or first tub) is 'cleared out, filled again, and so on. The salt of the plant 'must be separated by agitating the water in the mortar, 'by using wooden buckets full of holes, fixed to long 'handles. Be very careful in this part of the process. 'If the agitation be too soon stopped, the part used for 'dyeing, not being sufficiently separated from the salt, 'would be lost. If agitated too long after the salt is out, 'the parts remaining will form a new combination. The 'salt reacting on the dregs, will produce a second fer-'mentation, change the colour, and make what is called 'burnt indigo. This will be prevented by close attention

'to the colour, and changes of the dye, by drawing a 'little from time to time, into a clear vessel. When the 'colouring particles collect by separating from the rest of 'the liquid, quit using the buckets, and let the dregs settle 'to the bottom. Holes in the tub (or vat) at different, but 'regular intervals of height, previously made and plug-'ged, must now be opened, and the *clear* water drawn 'off. See that the water is clear before this is done, so 'as to secure every particle of dye-stuff. The dregs 'remaining, are then to be drawn into the third tub or vat, 'which is the settler. The water floating in this last vat, 'is to be withdrawn by means of a small perforation, 'minutely made above the dregs. When this is done, 'put the dregs into sacks, and when the drain of water 'ceases, put the indigo into chests, or small boxes. At 'the end of three months it will be perfectly dry, and 'ready for sale any where."

"A hint to the wise is sufficient." Indigo requires no expensive machinery to prepare it for market. Every farmer can purchase a molasses cask, and make of it two tubs. Every one who knows the use of the saw and the plane, can make a vat, perforate and spile it, and then make boxes or chests, for the indigo. The indigo planter will pay no *toll* of six, eight or ten per cent, and his valuable commodity being less bulky, will pay less carriage than cotton, rice, or sugar.

Hops—(*Humulus*,)

Are a profitable culture, and are indispensable to the baker and brewer. They are also used in medicine. When the vast quantity of porter, ale, and beer, made in this country is considered, it will be perceived this article is of much greater consequence than will at first strike *us*, who so seldom hear it mentioned. The labour, compared with that necessary to the production of rice, sugar, or cotton, must be light, and when the crop is to be gathered, children entirely useless for general plantation purposes, will be found valuable assistants. The North offers us a sure market, for any quantity we may grow. It is scarcely necessary to mention this article pays no toll, consequently has fully eight per cent. advantage of cotton, rice, or sugar. The hop produces variously to the acre, from 100 to 2000 pounds, according to the soil and season, but it is said the general average crop, is not less than sev-

en hundred pounds for market. This quantity, at 15 cts. per pound, gives to the acre $105. Which is much more than any rice or short-cotton lands pay, while the culture cannot be more expensive than short cottons, and not as much so as rice. The hop-grower is at one charge, unknown to any of our present cultures. The vines must be supported by stakes or poles, at convenient distances, but as these will be efficient several years, the annual cost will be unimportant. The experiment is worthy of a trial; if we are content to do only what our fathers did before us, we shall be double-distanced in the race with our Northern brethren—*they* will achieve fortune, while *we*, perchance, may lose what of it we have. Any planter may tend a few acres, and prosecute or decline the culture, as his experience advises.

CASTOR OIL—(*Palma Christi, or Ricinus,*)

Is another article we ought to produce for doméstic purposes, if not for exportation. No one will doubt it can be done to almost any amount, and as it can be made to serve the purposes of whale oil for mills, and of sperm. for dwellings, in addition to its extensive use as a medicine, it should not be neglected. Every farmer can make enough for his own use, but he ought charitably to consider the wants of his neighbours. It is no uncommon thing, to see cotton-gins worked by individuals, who grow no cotton of their own. Now, why cannot others establish presses for making Castor Oil? The expense, I judge to be less than that of a cotton gin. The process of making the best oil is easy, and simple. "The screw and lever used in baling cotton, are also used in expressing the oil from the beans. Under the screw is fixed a strong iron cylinder, into which the beans are put and covered with an iron follower, of diameter proportioned to the cylinder. The screw is forced down upon the follower, crushing the beans, and producing what is termed the "cold expressed oil." I should have mentioned the *capsules*, or unopened beans, are first to be well cleaned, and moderately heated in a furnace, not so hot as to be distressing to the naked hand. In this way, a bushel of beans yields seven quarts of oil." The cylinder, may have cocks at convenient distances from the bottom, so as to accommodate the draught, to the quantity of beans pressed, or but one, in which case the mass of beans must be always equal, and

accommodated to the vent for the oil. Nothing is more practicable than establishing oil presses; indeed, a cotton gin may by a very trifling additional outlay, become an oil press. As it is common now with many small planters, to sell their cotton in the seed to ginners, the same may be done by small producers of the castor oil bean, if it should become so freely cultivated, as to induce the establishment of oil presses. It cannot be other than a profitable culture. Had I a doubt on the subject, it would be removed by the knowledge of its having been so productive of gain, "to one Western planter, that he has increased the quantity twenty five hundred per cent. in six years." "He began with making *five hundred* gallons, in 1825, and in 1831, he produced *twelve thousand five hundred*." This oil is worth at least $1,50 per gallon, but introduced into general use, as I have hinted, the price will advance, it may be thought at first view. This impression will be found erroneous. Extended production must precede extended consumption. Hence the almost positive certainty that the planter will be amply remunerated for his labour, and the oil be brought within reach of all who now use sperm.—filthy detestable fish oil—though it is sperm. Who can bear the smell of it—the raw, fishy smell? Assafœtida is not half so bad. I trust the day is not distant, when the medical, will be but one of many uses, to which this oil will be applied.

Sweet Oil

Can be easily expressed from our common *ground nut*, but I am not prepared to say, it is not more profitable to sell the nuts in their native state. I mention the oil they yield, because in the transactions of the "London Society for the encouragement of Arts, Manufactures and Commerce," it is stated, a sample of it was exhibited in December, which they "received from Mr. George Brownrigg, of Edenton, North-Carolina, in the month of April. It had not been kept with more than ordinary care, was perfectly sweet, and was pronounced equal to the best oil, from the olive or almond, and applicable to the same purposes. Mr. Brownrigg stated, a bushel would, without the agency of heat, yield four quarts of pure oil. His mode of expressing oil, was to remove the shell, bruise the peas well, put them into canvass bags, and then apply the expressing power. The cake remaining, he found to be

excellent for fattening hogs." If you will inform me what a gallon of almond oil is worth, I will be able to determine the question, whether it is best to sell the nuts, or convert them into oil.

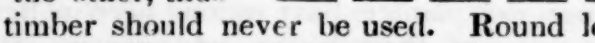
Mr. Editor, my paper is at the stationer's, or I should trouble you with some more of my thoughts, upon things not done or attempted. When I get a supply, you may hear from me again, and certainly will if you take this "in good part." Your well wisher,

CALEB.

Protection of River Banks.

Savannah River, Agust 20, 1836.

Mr. Editor—The approach of the period so much dreaded, and so generally considered stormy, naturally makes the planter consider the strength of his banks, and their power of resisting angry winds, and waters. Pity it is he does not sufficiently reflect on these matters, (so important to his success,) at times when he can prove "prevention is better than cure." When the danger is "dimly seen in the distance," he heeds it little, but when roaring about his ears, too late he remembers this weak line, that exposed bank, and that defective trunk—lamentations, *tears* even, will avail him nothing: the storm caring as little for one as the other, is determined to out-wail and out-rain him, and does not fail to do so. The morning opens upon his anxious eyes, and all they behold—tells of havoc, "hope deferred," and—well if not—of ruin also. It is strange, rice planters have so long been inattentive to the preservation of their banks, and margins on rivers. They replace blown up trunks, and repair broken banks, but this is always done at the expense of the margin, which they seem to look upon, as an inexhaustible stock, while they take no efficient measures for its preservation. Every one knows, as the margin diminishes the banks must fall back, the fields are narrowed, and that if no check be interposed, those beautiful fields must be sought under "rolling floods." This is the prospect before us, but still "it is not to happen in our day," and we are content. This sentiment discovers to the world a muddled judgment, and a bad heart. To me it appears a man has lived quite long enough, when he determines to live *only* for himself,

and the sooner he makes his bow, and exit, the better for the community—for the community can well part with him. I submit to any sensible man, whether the successive wastes of margin, and recessions of banks, will or will not, carry the rivers to the high grounds, and destroy the fields. The verdict will, I believe, be in my favour. Whether so or not, I think it will harm no one, to suggest means of protection, for margins and banks. I would recommend to every planter, to collect fagots of such under-brush as will last longest and lay closest, bind them together with grape, supple jack, or other vine, and fasten them securely by tree forks, a little short of, (or within,) low water mark. If this is properly done, the fagots will constantly collect mud, and form a mass beyond the margin, enabling the planter in due time to throw his banks forward, (instead of drawing them in,) and to reclaim another marginal bank from the river. Briers, and all thorny bushes, are best for this purpose, as they will generally lay close and are very durable, whilst the thorns are almost inedstructible. Planters will do well to cultivate the June, (or high bush blackberry,) and the raspberry, for this use alone, to such extent as their wants may require. They should make it as much their business, to raise the means of making fagots for protecting their lands, as to grow rice. In every exposed situation, I would add a floating defence, some feet in advance of the margin and fagots. This should be composed of two lines of logs, (or timber,) six feet apart, and secured by strong ropes, or chains to sinkers. One line should break, or cover the joints in the other, thus 
Square timber should never be used. Round logs may answer, but it will be found far preferable, to use timber somewhat of the wedge shape. For instance, lay down a piece of timber twelve inches (or more) square, draw a line through the centre of the upper surface, and hew diagonally from that line, down to the lower corners. The end will then present the shape of a cone, or the bowl, of an old fashioned wineglass inverted. Whatever mode of fastening the timber to the sinkers may be adopted, the apex of the cone, or lined edge, must be presented to the coming wave, and opposed to the sinkers. The sinkers must be so heavy, as not to be raised by the action of wind, or water on the timber, and the rope, or chain fastening the timber to the sinkers, should be long

enough to allow the former to ride easily, upon all ordinary waves, but not so long as to permit the surge to pass over without breaking. The object is to resist extraordinary elevations of the water, and diminish its violence, by dividing its volume. Squared timber, or round logs, will do both, but while timber of those forms will drive from its moorings, and augment the destructive violence of the water, that shaped as I have recommended, will retain its position, and prove a very efficient protection to the banks. If these suggestions prove useful to any one, I shall be happy, but much more so, if I prove pioneer to a better plan. Your obt. servant, GREENFIELDS.

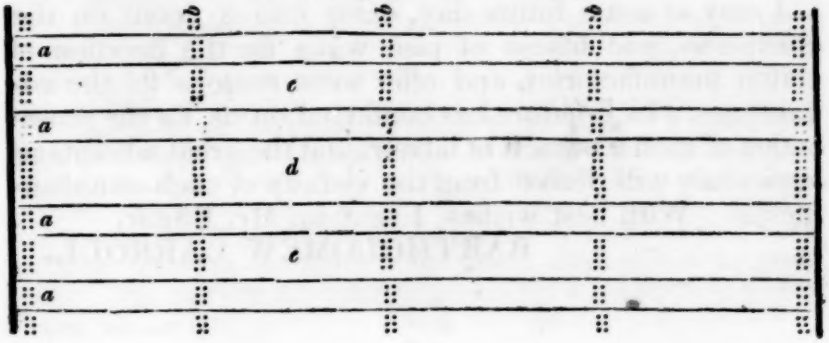
Pisé Walls for Rail-Roads.

August 25, 1836.

Mr. Editor,—Having in a former communication on Pisé Buildings, called the attention of directors of rail-roads and factories, to the peculiar fitness of such walls for the foundation of rail-roads, and for the erection of manufactories, I will now proceed in a succint manner to assign my reasons.

Engineers well know the great expenditure of power, necessary to overcome the re-action caused by the vibrating quality of elastic materials, on which tremulous machinery is made to revolve, and that an approximation nearly to the sluggishness of lead would be a consummation much to be wished in such walls; pisé, from the uniformity of its resistance, and the great quantity of matter rammed into the same space, possesses all the advantages of inertion, and quisive resistance to any stroke impinged on it.

An explanation of two indestructible Rail Tracks on Psié Walls, by B. CARROLL.



a, *a*, *a*, *a*, in this diagram, indicate four pisé walls running parallel, of two feet thickness; on these walls are laid sections of cast iron rails, four by four, and ten feet long, and coming up square to the one that joins, so as to admit a flat bar *(b)* of wrought iron to pass through the connected end, equally dividing each section, so as to keep them of equal heighth, or level. Each section, having in the middle, the connecting bar *(b)* of the same kind, running like the former, across the two tracks. When this is finished, then the space between the walls *(c)* are to be gradually filled up and carefully rammed, which when effected, will act as buttresses to the pisé walls *a*, *a*, *a*, *a*, and virtually produce a *pisé road* of about twenty feet wide.

The advantages of such a road are self-evident. It is built, I may say, of imperishable materials, totally dispensing with the use of wood, brick, stone or masonry, of materials which (except the iron) are at hand every where the road will pass through, and yet by compressure capable of being made to resist, the power of brass or iron. Here we have presented before us, a smooth equally resisting road, on which the locomotive will revolve without any shake, stroke, or tremour to resist or endanger its progress. On such a road, the impellant will receive less injury in one year's use, than it now does in one week, the saving of momentum will be immense, and the danger to life, trifling. Iron has a great sympathy with clay, and will not contract, or expand, so as to leave any space for motion of the rails. On the contrary, it will by oxidation, attach and indurate a large body of clay, and in effect root itself in the road, so as to become immovable. This is illustrated by sticking a knife, spade, or trowel in the earth for some time, and seeing with what difficulty, they are removed.

I may at some future day, enter into a detail on the cheapness, and fitness of pisé walls for the erection of cotton manufactories, and offer some reasons for the advantages, which nature has conferred on us, for the prosecution of such a branch of labour, and the great advantage *agriculture* will derive from the vicinity of such establishments. With best wishes, I remain, Mr. Editor,

BARTHOLOMEW CARROLL.

PART II.

SELECTIONS.

Extracts on the Culture of the Vine; by the Author of the "Domestic Gardener's Manual."

(Concluded from page 432.)

THE manufacture of *British wines* has, with few exceptions, been conducted upon very imperfect principles: flavours of all sorts have been aimed at; hence, every species of fruit has been employed, according to the taste, without considering that *wine* can only be produced by the saccharine principle of the fruit, in conjunction with a given portion of the bitartrate of potassa, (*i. e.* cream of tartar or argol); a substance which is always found in the wine casks of foreign countries, but never in those which contain the *sweets* made from our native or naturalized fruits. Dr. Macculloch justly observes, in his "*Remarks on Wine-making*," p. 23, that *sugar* is in certain circumstances entirely convertible in alcohol, or rather, to speak accurately, into that unknown combination of substances, from which alcohol may be produced by distillation.

Those fruits which contain the greatest quantity of sugar furnish the strongest wine, &c.

Now it appears to me, that herein he has laid down the grand and solely correct axiom of wine-making, which, however, he has somewhat overlooked, when at pp. 218–220, he enters into a comparison of the merits of ripe and unripe fruit. He observes that, "the making of good wine from grapes of British growth does by no means depend on their maturation." Again, "It is long since experiments were made in France, by several chemists, with green grapes and sugar, and with complete success; I have repeated the experiments, and varied them, with the best effects. The produce has differed with the management, and the results of the trials have been wines resembling Champagne, Grave, Rhenish, and Moselle, and of qualities so perfect, that the best judges and wine-tasters have not been able to distinguish them from foreign wines. The grapes may be used in any state, however immature: when even but half-grown, and perfectly hard, they succeed completely." All this is very encouraging, and it is equally true; but what is the Doctor's reason for giving a decided preference to immature grapes? He says, "It will invariably be found (p. 226) that the produce of *immature fruit is superior to that of the ripe.*" Why?—"In the ordinary grapes of our own growth, with the exception of some of the sweetest varieties raised in hot-houses, the effect of maturity is to substitute little else than water for those principles essential to fermentation, which exist in the green fruits. The quantity of sugar generated in the act of ripening is of no

value, as it is easily supplied by an admixture of common sugar with the juice; nor is any flavour gained by the maturation of the grape. At the same time those advantages which arise from the leaven and acid of the fruit are lost, as these substances disappear, in a great measure, when the ripening is perfected."

The author, it should seem, has overlooked his previous remark, that "those fruits which contain the greatest quantity of sugar furnish the strongest wines; for he here maintains that the sugar of the *mature* grape is of no value. I do not affect to deny that, unripe fruit may make the best wine, because I have not had an opportunity, as yet, of trying the comparative experiments; but knowing the luscious sweet of the grapes which my trees produce, a principle which has enabled me to preserve a number of bunches of sweetwater to the present day (Jan 16) without any other caution than that of suspending them in a closet: knowing also that each grape is, as it were, a mass of saccharine juice; and having made wine from ripe grapes, and tasted the product of the vintage of others, who act upon certain fixed rules, I cannot admit that the sweet principle is of no value, but must maintain that, pure and excellent wine can be made, at a very cheap rate, from ripe grapes. As to the leaven, or the chemical principle which produces yeast, it is not lost by maturation, as I shall shortly evince, by practical evidence; and if the acid—which certainly predominates in unripe fruit—*be* converted into sugar and water, that acid—presuming it to be the tartaric—can be supplied at scarcely an appreciable expense, as, according to the Doctor's own showing, at p. 241, *six ounces* of argol, or crude tartar, are sufficient to add the vinous acid to 10 gallons of *any wine*, even if made from gooseberries, currants, or other fruits, which appear to contain none of the tartarous acid.

Flavour, indeed, may be on the side of green grapes, and this is fortunate, as, in the event of wet and cold summers, the unripe fruit thus becomes perfectly available; and we ought to be grateful to Dr. Macculloch for having afforded us irrefragable proof that, fine wine may be prepared from green fruit, and grape leaves. I shall, therefore, in the first place, refer to his directions for the manufacture of both these wines, and then describe a capital and simple method of wine making from ripe fruit.

1. *Process for making ten gallons of Wine from Unripe Fruit.*—Forty pounds of the grapes are to be placed in a very clean tub, capable of containing fifteen or twenty gallons, and bruised in successive portions, care being taken to crush each berry, without breaking the seeds. The stalks may be used, as they add no unpleasant flavour. Four gallons of cold water are then to be added, and the contents are to be stirred and squeezed till the juice and pulp are separated from the solid matters; after which the juice is to be strained through a coarse bag, by as much force as can be applied. These directions refer particularly to the first processes in the preparation of gooseberry and currant wines, and may be useful to those who intend to prepare those liquors; it is added, with grapes, however, "the husks may always be fermented in the vat with the fluid, and with the exception of the seeds, no harm can arise from bruising the solid matters, since the skins give out no bad properties." Whenever the juice is strained off, one gallon of fresh water may afterwards be passed through the *marc* to remove any remaining soluble matter. "Thirty pounds of white sugar are now to be dissolved in the juice thus prepared, and

the total bulk of the fluid made up with water to the amount of ten gallons and a half.

This *must*, the Doctor adds, is equivalent to grape juice, and it is to be put into a vessel of sufficient size to contain it; a deepish tub is best, which will leave but three inches space above the surface of the liquor; for the uncovered wood attracts some of it, and, as no spirit is there formed, the syrup on the wood is liable to be changed to acetous acid, by the action of atmospheric air. To prevent this, let a coating of lime be applied to the wood above the liquor; it will correct acidity, and do the fermenting must no injury.

The vessel is to be placed in a temperature varying from 55° to 60° of Farenheit's thermometer, there "it may remain for twenty-four hours, or two days, according to the symptoms of fermentation which it may show; and from this tub it is to be drawn off into the cask in which it is to ferment."

This cask is to be kept filled with the surplus portion of must, preserved in a jug or bottle for the express purpose. When the hissing is very much diminished, a bung is to be driven in, and a hole bored for a vent peg, which is to be put into it, and, occasionally, loosened, in order to permit any material volume of air that has been generated to escape. When no danger is longer to be apprehended, and little air escapes at the small hole, the spile is to be permanently fixed tight.

"The wine thus made must remain over the winter in a cool cellar, as it is no longer necessary to provoke the fermenting process. If the operator is not inclined to bestow any further labour or expense on it, it may be examined in some clear and cold day, towards the end of February or beginning of March, when, if fine, as it will sometimes be, it may be bottled without further precautions." The wine thus produced will be sweet, and in the case of gooseberry "be similar in quality, (flavour excepted,) to the wines of champagne, with the strength of the best Sillery."

"If dry wines are desired, the proportion of the fruit to the sugar must be greatest" (40lb. to 30lb) "that has been named. The bung must remain open, *but the fluid must not be allowed to escape;* while, if the fermentation proceeds languidly, it must be accelerated by heat and agitation. If, when it is finished, the wine continues too sweet, it may be bunged down till the spring, without racking, or fining" (with isinglass,) "when the fermentation must be again renewed" by rolling the cask, stirring the liquid, or, by "adding some fresh juice of the same fruit. At whatever time, and under whichever of these processes it has become dry, it is to be carefully fined and racked into a sulphured cask, and bottled after being once more carefully fined." These processes will be further noticed.

2. *Grape-leaf Wine.*—The leaves may be taken at any time, from vines cultivated expressly for this object; in other words, from standard trees fastened to stakes, as in the vineyards, and never pruned. Even the young green cuttings and tendrils are equally useful. One caution ought to be observed; if any portion of leaves be removed from trained fructiferous trees, not one must be touched which is opposite to a bunch of grapes, as not only is the fruit in a degree dependent upon its neighbour leaf, but the young bud at the base of the footstalk will be either lost or injured whenever a leaf is taken away: hence, vines ought to be grown expressly for leaves, and the *claret*, as Dr. Macculloch observes, may be cultivated for this purpose, as

then the wine will have a red colour. He recommends young and not fully grown leaves; but those of the claret have no colour till late in the autumn.

For ten gallons of grape-leaf wine, "forty or fifty pounds of such leaves being introduced into a tub of sufficient capacity, seven or eight gallons of boiling water are to be poured on them, in which they are to infuse for twenty-four hours." The liquor is to be poured off, and the leaves then pressed, to force out the retained liquid: the mass is to have a gallon of cold water poured over it, and, subsequently, is to be pressed a second time. Sugar from 25lb. to 30lb. is to be dissolved, and the quantity made up to ten gallons and a half; after which, the processess of fermentation, barrelling, racking, &c., previously described, are to be followed.

A little experience will, of course, be required, but, I can assure the reader that very good wine, of a pleasant vinous flavour, may be produced from grape leaves; nor need ten gallons be made; I have, on several occasions operated with one, two, three gallons, and in glass vessels. Once, and simply with a view to determine the colour and quality of an infusion of claret grape-leaves, of which I then had very few, I made a single quart of fluid, which, with the juice of two or three bunches of ripe grapes, and eight or ten ounces of sugar, produced a vinous fluid, of an agreeable flavour, beautiful crimson colour, and which would have kept sound for years. The whole process was carried on in glass.

Having thus described, in general terms, the method recommended by Dr. Macculloch, for producing two species of grape wine; occasionally quoting passages from his valuable work; I shall now enter, somewhat particularly, upon the other leading objects of this article, and describe an actual process of wine-making from *ripe* grapes, by which a liquor can be perfected, so pure, so highly flavoured, and entirely vinous, that when it is compared with the ordinary wines of the Cape, will leave little doubt of the real importance of the grape tree cultivated for the *express purpose of the vintage*.

3. *Wine from Ripe Grapes.*—I shall, in the first place, suppose that a small quantity only of fruit can be obtained; and, therefore, that the wine to be made, cannot exceed four gallons. Let, then, a perfectly sweet and well-seasoned cask of that size be procured—one that has contained brandy will be very eligible. If a cask be foul, and yet quite sound, and its staves free from decay, it can be sweetened by steam, after having been cautiously washed to remove every particle of dirt or impurity. A tea-kettle may be employed, though a small boiler with an air-tight cover, and projecting pipe at the top of it, would be better. Place the barrel with its bung-hole down-ward, and insert the nozzle of the tea-kettle or pipe into the tap-hole. Apply a forcible degree of steam till every stave be heated throughout: (twenty minutes or half an hour will be sufficient;) and, during the steaming, water of a high colour, and very foul odour, will escape at the bung-hole. As steam occupies many hundred times the space of common water, though it does not reveal a higher degree of heat than 212 degrees, yet, *that heat* is distributed through such an immense volume of minutely divided particles, that it exerts an energy approximating to the expansion of its volume. The steam from one gallon of water will more effectually sweeten a cask, and in less than one-fiftieth of the time, than any number of ablutions with cold water; and water, even at a full boil, will not, by ten applications, prove

equal to one good steaming. The barrel being ready, it should be washed over with pure cream of lime, to prevent acidity; and be exposed to the air. Another clean barrel, or tub, large enough to contain six or seven gallons, should be at hand; and in this, the grapes are to be placed, having been first freed from every bad or mouldy berry. If a dry red wine be the object, with a flavour resembling port or claret: the grape of *that vine* ought to be selected, and the leaves of the tree should be soaked in boiling water, to produce colour. The stalks and husks also of the grape need not be removed, as colour and roughness must depend upon the extractive matter of the skins, which will be dissolved during the process of fermentation. If a white and full-bodied, but yet dry wine, be desirable, the berries must be picked from the stalks before they are put into the tub. These preliminaries being understood, I proceed to describe the process which will produce a wine of this latter quality.

Suppose the period to be October, the grapes perfectly ripe, and that there be sufficient to yield two gallons of pure juice, at the least. Then, the picked berries being deposited in the open, upright tub, pour on them a gallon of cold water, and stir the whole gently together: this operation will tend to remove any leaves, or imperfect, light berries, and should be poured off, through a sieve, and, when strained, be returned on the berries. These are to be crushed and broken up to a pulp with the hands, and, after standing an hour or two, the juice must be strained off into a pan, and the pulp pressed as completely as possible. A small wine press and hair bags would effect the process most completely; but whatever be the machinery, every berry must be broken, and the pulp, or *marc*, drained, and completely pressed. The product is to be measured; and as one gallon of water only was employed, whatever liquor there be in excess must be the pure juice of the grape: of this *not less than two gallons*, should be procured; if more, it will be all the better. To simplify the description, I presume that three gallons of fluid have been yielded to the pressure, one of which, of course, is water. Add another gallon of water to the pressed pulp, and repeat the washing and pressing, by which means the whole of the valuable juice will be secured, and the product will be four gallons. Wash the tub, drain it dryish, and lime-white the upper part of it; remove it to a cellar, or to any apartment where, if possible, an equable temperature of about 50 or to 55 degrees may be maintained: then pour in the juice cautiously, so as not to wash down the lime: which as, before observed, is intended as a preventive of acidity. However, lime is frequently a powerful adjunct to the process of wine-making. *Sherry*, Dr. Macculloch tells us, is prepared with lime,—"The grapes are first slightly dried, sprinkled with quicklime they are then wetted with brandy, on being introduced to the press," &c. Lime is used in France, I have been credibly informed, in the manufacture of some wines of the highest order; with a view, no doubt, to correct a redundancy of an acid (perhaps the *malic*, as conjectured by Dr. Macculloch,) and therefore it may be used with perfect confidence. The four gallons of expressed liquor are to be covered with a clean wollen cloth, and the loose head of the cask, and left to establish the fermentation. But now, a consideration of great interest presents it self. If the process be conducted in a cool cellar, with a northern aspect, where the temperature cannot be influenced by direct solar heat, the fermentation may go on for a fortnight, or longer, at this declining season of the year,

without the addition of the required quantity of sugar; and it will be advantageous that it do so, because whatever feculencies arise and floats upon the surface, may be removed by a skimmer, without occasioing the loss of any sugar; but if an equable cool temperature cannot be commanded, it will be prudent to permit the fermentation to begin, so as to raise to the surface the few light particles of pulp; these are to be skimmed off, and then sugar is to be immediatly added, and with it an ounce of powdered white argol, or tartar of wine. The proportion of sugar need never exceed (even if green grapes be used) three pounds per gallon, to produce a wine equal in strength to the best Moselle: for wine made from rich and luscious grapes, two pounds and a half may suffice. We will take three pounds as the standard, and this ought to be lump sugar, not exceeding in price 9d per pound: all moist sugars tend to produce a flavour of molasses.

The *processes of fermentation* are involved in mystery. We know that all the materials employed are chemically reducible into oxygen, hydrogen, and carbon, with a little azot; the last of which is traceable to the natural yeast, or leaven, that is found in the vegetable extractive of the fruit. By the action of the atmosphere, and a temperate degree of heat, a disturbance is created in the must, an interchange of the elements takes place, and as chemical affinities act with most energy at the moment of induction, the nascent oxygen unites with a portion of the carbon, and forms carbonic acid. It is this gas which, in its escape, causes that hissing, and pungent odour of the fermenting must. As the process proceeds, some of the hydrogen, oxygen, and carbon combine in those peculiar portions, which constitute *vinous alcohol;* another part, and also a very small quantity of azot, or at least the elements of all these, are united in the form of yeast, or leaven; some of which rises in the state of scum, while another part sinks to the bottom of the tub. Thus we know effects, but we perceive little of causes: however it may not be presumptuous to direct the reader's attention to the amazing facts recently discovered by Dr. Faraday, and announced in the *Philosophical Transactions.* His researches in electricity have led him to discover, that substances contain certain definite proportions of that etherial fluid. It should seem that water is a chief instrument in vinous fermentation, and this fluid requires for its decomposition a vast volume of electricity, to reduce it to its elements:— "*The proportion,*" says Dr. Faraday, "*is so high, that I am almost afraid to mention it.*" It would appear that 800,000 charges of a Leyden battery would be necessary, to supply electricity *sufficient to decompose a single grain of water*—" or he adds, "if I am right, to equal the *quantity of electricity which is naturally associated with the elements of that grain of water, endowing* THEM WITH THEIR MUTUAL CHEMICAL AFFINITY."

If these elements be separated by the *galvanic process,* we witness the astonishing energy the developed fluid can exert; but in the silent processes of common chemical affinity, of which fermentation is one of the most mysterious: we discern not the brilliancy of revealed light: hence we may be inclined to doubt. But in these instances, new combinations take place, and decomposition is, at the very moment atten. ded with simultaneous associations of new components, leading to varying] results. Such an instrument as the one we are now contemplating, is required to effect the astonishing transitions attendant upon vinous fermentation, and although we cannot discern the machinery, we may nearly assure ourselves that it is called into operation.

I conjecture that the first step in fermentation is the decomposition of a certain portion of water; the electricity thus set free, disturbs the union of the elements of the sugar and vegetable extract, new, and still definite proportions of electricity, are liberated, thus heat is raised, and new compounds are formed; one of which passes off in volume of carbonic acid gas, holding in solution a portion vaporized water, and vinous alcohol. Gradually, the decompositions cease, and the new chemical compounds are perfected: wine is produced, which may be considered as a peculiar product, resulting from the union of vegetable extract with an alcoholic fluid of a specific character, capable, by heat, of being separated in the state of common alcohol, but utterly incapable of being reunited with the residuary extract in the same condition in which it originally existed.

The foregoing remarks are a digression; but in the present state of science they appear to be called for; because the process of fermentation has heretofore been regarded almost as an effect without a cause. That cause, I think, is now discovered, though we still are uncertain of the agent which elicits the first spark. I beg, therefore, to direct the attention of the scientific enquirer to the masterly experiments of Dr. Faraday, and to bring the astounding facts, which he has announced, to bear upon the mysterious process of vinous fermentation.

I now resume my remarks at the point where I stated that the must was to be left to ferment for a time, without the sugar. In the temperate, declining heat of October, little danger of an acetous process need be apprehended, and the juice of the well-matured grape contains so much sugar, that fermentation may be allowed to establish itself, and proceed for a fortnight or more, the liming of the belt of wood above the surface being renewed, if it be washed off. When the extraneous matters have arisen, and been cleared off, the sugar should be added, and the whole of the materials stirred together from time to time, till it be completely dissolved: the *must* should then be barrelled immediately. If it be the object to produce a dry wine, the yeast which rises must not be permitted to overflow; and therefore the barrel is not to be filled to the bung. The ferment being thus retained, will exert its force upon the must, and the small space left will not cause any injury to the wine, provided a tile be placed over the hole, which, when the commotion of the liquor has subsided, may be replaced by a piece of brown paper, pierced with pin-holes, and pasted over the orifice.

As long as any carbonic acid gas is generated, the paper will prevent the access of atmospheric air; and things being in the state described, the wine will be safe for many weeks: however, if upon dipping in a small phial, with a string tied to its neck, and bringing up a portion of the liquor, it be found nearly clear, free from air bubbles, and of a vinous flavour, the bung should be covered with a piece of stout canvass, and tightly pressed into the bung-hole. About Christmas, a fresh portion should be examined; if the vintage have been successful, the flavour will be found improved, the sweetness abated, the colour more bright; and, upon pouring a few drops upon a clear fire, a light flame will arise. With these promising appearances, the bung may be pressed firmly into its place, and the wine left perfectly at rest till the dry weather of March sets in. At that period, the phial should again be let gently down, and if the liquor be bright, and the flavour vinous, and dry, it may be racked off the lees, into a perfectly clean cask, well filled with the fumes of sulphur, produced by dropping into the dry cask a strip of linen rag steeped in melted

brimstone, and then ignited. The fumes consist of gaseous, sulphurous acid, an agent which has a specific attraction for the leaven or yeast, unites with, and precipitates it, and renders it perfectly inert.

The residue of foul wine should be strained through a close flannel bag, that has been sweetened in hot water. The first runnings are to be returned to the filter, till the liquor passes quite clear; when a funnel is to be put into a bottle to receive the filtering wine, and thus prevent the escape of the spirit. As each bottle becomes filled, it should be tied over with a moistened bladder.

The wine in the sulphured cask, after being securely bunged, should be rolled for a considerable time to bring every drop of it into contact with the acid fumes: after which process it must remain undisturbed for a week, when the strained wine in the bottles will have recovered its briskness, and be in a fit state to be added to that in the barrel. I must remark in this place, that a bladder skin is an effectual safeguard to bottled wine:—it is more by a secret law of nature, bladder or membrane, though impervious to liquids, appears to be, in a certain sense, permeable to elastic fluids: thus, a bladder filled with oxygen and hydrogen gases (a mixture violently explosive) will, in a few hours, without becoming empty, admit of an interchange between the enclosed gases and those of the atmosphere; and that so completely, as to destroy the explosive power of the former. Wine secured by bladders, instead of corks, will mature more rapidly, and become proportionably alcoholic and dry. At first, the bladder is expanded outwards; it then gradually flattens, and finally becomes depressed, forming a concavity within the neck. I have observed these processes for a long period; and have kept wine, tied over, for three years, with real advantage. In fact, for all wine that is intended to be kept upright, bladders are superior to corks; always, however, premising that, the membrane be moistened before it is tied on, so that it adhere closely to the neck. One circumstance alone militates against this mode of closing the bottles: slugs and snails are fond of the substance, and occasionally drill it full of holes.

If the wine, thus sulphured and bunged down, remain perfectly quiet, and bright, it may be left in the cask till October, and then, in clear, tranquil weather, be bottled off; and being kept one year more, it will be perfectly fit for the table. Such is the general result of a process for a dry, mellow wine; it has been successfully practised for years; and no one, with such wine at his table, ought to complain of inability to produce wine of English vintage equal to that of the Cape.

In some instances that have come within my observation, racking and sulphuring have been dispensed with; for the natural leaven of the fruit, and the quantity of saccharine matter inherent, and superadded, have so completely balanced each other, that the wine has remained on the lees without any injurious fretting, or secondary fermentation; and at the close of the first year (October) has been bottled off from the first cask.

A few circumstances, which may influence the quality of wine, remain to be noticed. In some cases it will become dry very rapidly; thus I have known a small cask, if exposed to 60 or 70 degrees, to lose its sugar in two months: such wine, if clear, should be bottled without delay. In other instances, a year or two may elapse, and leave the wine far from bright or of good flavour. On this subject, Dr. Macculloch justly observes—that "the impatience of the makers of domestic wines to enjoy the produce, is one of the frequent causes of failure

They are generally drunk within a year or two, and long before they are completed; *since even the best wines of foreign countries often require many years to bring them to perfection.* It is very common for the made wines to possess a bad flavour, when first made, not unlike that which has hitherto infested most of the wines of the Cape. Time dissipates this, even in the bottles;* and in some experiments made for this purpose, it was found that a wine made from *vine leaves*, of which the smell and taste were, owing to some accident, intolerable, became, after six years, so perfect, as not to be distinguished from white Hermitage."

The sweetness of wine, if permanent, must depend upon a want of a due balance between the quantity of sugar and the leaven in the liquor; the deficiency of the latter preventing the decomposition of the former; hence, if sweet wine be required, the quantity of sugar ought to be increased to perhaps, three pounds and a half, or four pounds, to the gallon of expressed liquid; or if no increase of sugar be desirable, the fermentation should be conducted almost entirely in the barrel, and not in the vat; the cask should be filled, and be kept full, by adding portions of reserved liquor, so that the yeast be regularly thrown off, instead of being retained: and racking should be attended to as soon as the wine shows a tendency to become fine. This process ought to be repeated two or three times, into sulphured casks, and always in tranquil weather, with the wind at some point to the north. Fermenting liquors are always most quiet when the atmospheric pressure is considerable, and its state not disturbed by electric decompositions: therefore, with brisk west, or southerly winds, a depressed barometer, and a fermentation of watery particles, they are invariably less bright and lively.

Wine, under some circumstances, remains foul, and cannot be fined. If, upon racking the wine, it remain milky, or replete with particles resembling those of pearl or talc, it may be tried with one quarter of an ounce of isinglass, dissolved in a pint of the wine, by gentle warmth, and brisk stirring, poured into the barrel, and thoroughly blended, by rolling the cask for a minute.

Fining, like every other process, with wine, while in the cask, should be done in serene, cool weather; and it will be soon apparent whether it will be successful or not, if, after three or four days, the phial be cautiously let down to an inch below the surface of the fluid. If it bring up clear wine, the process will finally succeed, and the wine should be racked off into a sulphured cask, as soon as the feculent matters be deposited. But foulness is generally the result of a certain state of the components, which state must be referred to, in order to render this paper at all complete.

There is a disease of vinous liquors, which the French denominate "*La graisse des vins*," but these terms do not admit of ready translation into English. A paper or "Memoire," on this subject, by M. Francois, apothecary, at Châlons sur Maine, was read before the local Society of Agriculture, in 1829; and to the French reader would furnish much pleasurable information: I regret that my limits will not permit me to attempt its translation. The article appears in the "*Annales de Chimie*," Feb. 1831, vol. 46, p. 212. The writer observes

*Particularly, I believe, if they be covered with sound, well adapted bladder skin.—T.

that the disease originates in a substance, known to chemists, by the term of *glaïadine*, which can readily be procured from the gluten of wheat. The disease, then, is identical with ropiness; and, therefore, is somewhat different from the one I now allude to, though its cause, I conjecture, is the same. The writer says that, if a spoonful of an alcoholic solution of glaïadine (or glaire,) procured by digesting gluten of wheat in spirit, be mixed with perfectly clear, bright wine, the latter will become milky, and at the instant assume all the appearances of the diseased wine (*l'aspect du vin gras.)*

The proximate cause of this glairy foulness of the wine operates peculiarly in the manufacture of white wines, because, as M. Fran ois remarks, "they have not been in contact with the husks of the grapes; the *glaïadine* contained in the juice not having melted with a sufficient quantity of *tannin*, to neutralize it, remains free and floating in the liquor, producing, to a greater or less extent, the effects complained of. Thus, then, it appears that, the predominance of a certain glairy substance, not widely remote from *gelatine*, and the absence of the tanning, astringent principle, are the sources of the evil; and as these substances are antagonist to each other, a remedy very naturally suggests itself. "Red wines," it is observed, "are not subject to the complaints *(la graisse,)* because they have been duly fermented with the husks. *Tannin* is found in the skins of grapes, and isinglass (on the principle of tanning) is well known to be a cleanser of wines, in consequence of its combination with tannin, an insoluble precipitate being the result of the union of the two. But isinglass will not fine wine at times; and whenever the failure is observed, the presence of the peculiar floating matter, or vegetable gelatine, is to be suspected. Mr. François arrived at this conclusion, and by repeated experiments discovered that, pure tannin added to the extent of three ounces and a half, to a quantity equivalent to one hundred bottles of wine, effected his object, and secured the wine entirely from a recurrence of the disease.

He recommends, however, that the dregs or lees should be removed before the application of the tannin, and that isinglass be subsequently employed. Upon these grounds, and reasoning from analogy of facts, it appears to me that, a small portion of a pure astringent principle ought, as a precautionary remedy, to be superadded to all white wines, at the first racking, if they do not then appear to be quite clear. Now, a safer medicament cannot be found than *cátechu*, or, as it was formerly termed, *terra Japonica*—Japan earth. This substance was once used extensively in medicine, and it was found, by Sir Humphrey Davy, to abound with pure tan. Dr. Macculloch also alludes to and, recommends it, to give astringency to wine. One ounce of this substance, in fine powder, added to six gallons of racked wine, and incorporated, by rolling the cask occasionally for a few days, would yield tannin sufficient. If the wine abounded with glair, or gelatine, the two antagonist principles would blend, and precipitate each other, and then, the super-addition of the animal jelly (isinglass) employed in the usual way, would remove the remaining tan, if any, and leave the wine in a healthy state, and render it bright.

The reader may have remarked, that nothing has been said of the spirits, brandy, rum, or gin, as adjuncts to wine. To those who seek for a tissue of sound arguments in proof of the many bad consequences that result from such additions, I recommend a perusal of Dr. Macculloch's work. I restrict myself to the simple fact that, spirits, of

any kind, are factitious additions, void of any utility whatsoever; and only productive of narcotic effects, at a vastly increased cost. If the natural materials employed—(and I consider sugar, though it be *added*, one of the most needful constituents of vinous must)—produce, by spontaneous fermentation, a vinous alcohol, of sufficient power to burn freely when thrown on live coals, and to preserve the wine in an improving state for fourteen years, what reason can there be to add laborated distilled alcohol to the wine? The question solves itself, and admits of only one reply, namely, that it is not *pure wine*, but a mixture of wine and spirit which is the object to be attained! I certainly shall not enlarge upon that part of the process.

Yeast, or barm, has not been named, and simply because it is never required in the vintage of pure wines from fruit. In the preparation of parsnip wine, indeed, a little yeast may be required; but it should previously be well washed, and passed through bran, to destroy the bitter principle. In applying it, a very large slice of bread ought to be used as an absorbent for the barm: it also will assist the fermenting process by adding vegetable extractive and gluten.

I shall close the article, by adding a table to exhibit the expenses attendant upon the preparation of wines of three different degrees of strength. The first is calculated for wines of a light body, which may be consumed within the year, or eighteen months after they are made; the second refers to those of ordinary consumption, as desert wines; the third to those which are either intended to retain a considerable portion of unlaborated sugar, and to be permanently sweet wines; or to become dry, by a protracted fermentation, and age; they will keep well for twenty years. A single gallon, old wine measure, is the standard; and the calculation is made upon it. Of course, the new imperial standard will require an increase in all the proportions; but will not interfere with the comparative cost or strength; the fruit is supposed to be produced, not purchased.

Table of Expenses and Results.

	s.	*d.*
One wine gallon of the prepared expressed juice of the grape—the value must be optional.		
No. 1.—With 2½ lbs. of loaf sugar, at 9d. per lb. adding 10 per cent. for incidental expenses. - - - - -	2	1
Yield about 4½ bottles of light wine, under 6d. each.		
No. 2.—With 3 lbs. of sugar, at 9d. and 10 per cent.	2	6
Yield, say 4½ bottles of good dry wine, at a fraction less, 7d. each.		
No. 3.—With 4 lbs. of sugar at 9d. and 10 per cent.	3	3½
Yield 4½ bottles of strong wine at 8¾d.		

If honey be used, the *cost* to the producer must be wholly arbitrary, or ad valorem. The real outlay forms the only calculable item, and that is upon the sugar.

On the Cultivation of the Plum, with some Remarks upon Grafting on Peach Stocks; by S. POND.

[FROM THE AMERICAN GARDENERS MAGAZINE.]

Having frequently been called upon to state some reasons why the plum trees in my garden are so much more healthy and vigorous than trees in general, and so much more free from all kinds of insects which infest these trees in great numbers in many other places, I send you the following remarks, which, perhaps, if they contain nothing very new, may be of benefit to some of your readers, and, at least, call attention to the subject.

In the neighborhood in which I reside, the plum trees, in the various gardens, have been declining in vigor and health for many years, and where, formerly, bushels of fine fruit, though of the more common kinds, were raised, now scarcely enough is produced to remunerate for the labor of picking; indeed, a large part of the trees have decayed and been rooted up by the proprietors; some few young trees have been set out; but many of these have shared the same fate of the old ones; the same insects and the same disease, if such it is that destroys the trees, from inattention, having been allowed to spread to such a great degree as to defy all attention to save them.

The first object in planting plum trees is, to select fine, healthy, handsomely formed ones, about two or three years, from the bud or graft, and worked upon their own stools; be careful, in transplanting, to cut the roots as little as possible. The soil of my garden where the trees are planted, is deep and rich and quite moist, and I find that they bear fruit much more abundantly in such than in a lighter one. The situation is very low, so much so, that about four or five years since, in the month of March, the salt water, from the unusual height of the tide that season, overflowed the whole of it to the depth of fifteen or twenty inches. At the time, I had a fine lot of cherry and peach trees which which were covered with flower buds; but as soon as the warm weather of spring came on they soon gave signs of decay, and, before the close of summer, were all nearly or quite dead. Grapes, strawberries, &c. shared the same fate.* I was much surprised, however, to notice the vigor of the plum trees that season; they made uncommonly large shoots; and the foliage was of a dark green and most vigorous growth; they seemed, in fact, to have taken a new start, and they have ever since contiuued to grow with the same strength, bearing full crops every season, more particularly the last. The bark is smooth and free from all *excrescences* of any kind; and the fine appearance they have is entirely different from any other I have seen.

Plum trees I have found are kept in better health and a more vigorous state by setting their roots somewhat higher in the soil than most other trees. In planting I have set them at the distance of about twenty feet apart. In pruning, considerable care is requisite, and the branches should not be cut indiscriminately as is often done by many persons, taking out a branch here and there, and leaving the tree without any shape; in the first place, very few large limbs should be ta-

* Residing in the same neighborhood, and very near Mr. Pond, our garden suffered in a like degree with his. Many of our trees were injured, and strawberries and many other small plants totally destroyed. The plum trees were, however, all the more vigorous.—*Conds.*

ken off at all; all trimming should be performed on the young wood, and the judicious pruner must look ahead a year or two if he would excel in the cultivation of the plum. Cut out the branches in the middle of the tree and keep it open, so that the air and sun can penetrate freely to the fruit. In the month of July, part of the new shoots should be rubbed off with the fingers, and the others headed down so as to make them throw out laterals upon which the greatest quantity of fruit is produced; keep the branches well shortened, and every year, in the month of July, go over the trees and rub off and cut away as above directed. By this course of culture the trees will be more dwarf in their growth, and the branches, being kept thin of wood, will produce a much larger quantity of fruit.

The grafting of the plum on peach stocks has lately prevailed to a considerable extent with nurserymen, and many trees have been spread about the country grown in this manner. A few years since, I visited many of the nurseries near the city of New-York, and purchased from one or two a large number of plum trees. I did not know, at the time, that they were on the peach stock; but when I received the trees and commenced setting them out, I immediately perceived what they were. They were planted with the same care that all my other trees were, and during summer they made a vigorous and strong growth, and I began to think that they would answer a better purpose than those on their own bottoms. But, by the next spring, they presented a different appearance; many of them had begun to decay at the root and gradually they became less and less vigorous until autumn, when some of them showed signs of immediate death. The succeeding winter the cold was rather severe, and towards spring, at the season for swelling their buds, but few of the trees showed any signs of vegetation. I took the soil away at the roots, and there found what a moment's reflection would have convinced me I should. The stocks just below where they were grafted were completely covered with gum; and the *borer*, which seldom touches the plum, had made sad ravages. I soon determined to root them up, and also came to the conclusion never to plant a plum tree, grafted on a peach, again.

The only advantage that I have ever heard advanced in favor of peach stocks is, that the plums grow more vigorously and consequently come into a bearing state at an earlier period than when on their own bottoms; every body knows how short-lived the peach tree is in our climate; how subject to gum, canker, and other diseases; and to graft a tree, so hardy as is the plum, upon it, seems too absurd for belief. Gaining a year or so in procuring fruit, if indeed this is the fact, which I am inclined to doubt,—is very little in comparison with the loss of the tree after three or four years of care and expense in bringing it into a bearing state. But with all these obvious facts before the public, hundreds of trees, worked upon the peach, are yearly sold and planted. One great object in grafting or budding upon the peach, is the facility with which the scions or buds take, while the plum stock is extremely difficult, and often one half or more of them do not grow at all. Plum stocks are also not easily to be procured of size large enough for grafting, as they require to be three years old, while the peach requires but one. The demand for plum trees having been very great, is probably one reason why more peach stocks have been used; but the purchaser should always be informed when such is the fact. I would never plant a plum tree upon my grounds again unless it was budded or grafted on its own kind.

Among the many kinds of plums with which our catalogues abound, the following I can recommend as excellent, having fruited them successively for two or three years:—

White or yellow fruited.	*Purple fruited.*
White Gage,	Royal de Tours,
Bingham,	Duane's Purple,
Coe's Golden Drop.	Smith's Orleans,
	Semiana,
	Seedling.

These are all constant bearers, and of large size, beautiful appearance, and fine flavour. The old Green Gage, with me, is a shy bearer. Corses' Field Marshal has not yet come into bearing, but it promises well, and is a very vigorous and hardy kind. Bolmar's Washington has not yet produced much in my garden, although the trees are quite large, and have flowered every season. Of the above list, the Royal de Tours is quite early, and the Semiana a very late plum, in eating from the middle of October to the middle of November. Some trees, only two years from the graft, produced twenty or thirty plums last season. At the season it ripens, there is but little other fruit, and on this account it is a very valuable sort.

There are some insects which attack the plum, and, in some districts, destroy the whole crop of fruit. But as I have never been troubled to any great extent, I can say but little about them. The *curculio* I have seen on the trees sometimes, and I am very particular to have *every* fruit picked up *as soon as it falls from the tree*. By this means the insect has been prevented from spreading, whilst in gardens almost adjoining, they have destroyed the crop for several years. The black excrescence which appears on the branches, I have also, as yet, seen but a few times; and this I immediately cut away. I have no doubt but it is caused by an insect, although some cultivators attribute it to disease arising from the soil and situation, I have always given great attention to the cultivation of the plum, and have found no trouble in procuring fruit; and if the same care is given by other persons, I see no reason why plums should not be as plenty as any other fruit.

Yours, S. POND.

Cambridgeport, April 4, 1835.

On the Preservation of the Fruits of the Earth by Drying.

[FROM CHAPTAL'S CHEMISTRY.]

In all vegetable products, water exists in two different states. one part of it being found free, and the other in a state of true combination; the first portion, not being confined except by the covering of the vegetable, evaporates at the temperature of the atmosphere; the second is set free only at a temperature sufficiently high to decompose the substances containing it: the first, though foreign to the composition of the vegetable, enters into every part of it, dissolving some of its principles, serving as a vehicle for air and heat, and being converted by cold into ice; by these several properties it greatly facilitates decomposition: the second portion from which no evil of the kind arises, is found combined and solidified in the plants, and its action is thus neutralized. Dry-

ing, then, consists in depriving the product to be preserved of the water contained in it in a free state, by heat; and from what has been observed, it follows, that too great a degree of heat must not be applied, as, in consequence, the taste and the organization of the substance would be changed by a commencement of the decomposition of its constituent principles: the temperature should never be higher than from 35° to 45° of the centrigade, (= from 95° to 112° Fahrenheit.)

Drying can be performed either by the heat of the sun or in stove rooms. In the southern climates the heat of the sun is sufficiently powerful to dry the greater part of the fruits, and thus to preserve them unaltered: the drying is effected by exposing them to the rays of the sun upon hurdles or slates, where they will be protected from rain, dust, and injury from animals. Practice alone is sufficient to enable one to judge of the degree, to which each kind of fruit must be dried in order to its preservation.

When the outer skin or rind of the fruit is of a kind to prevent the water from passing off freely, incisions are made in the rind to facilitate its evaporation. In this manner are prepared most of the dried fruits, which form so considerable an article of commerce between the south and north.

Those fruits which contain much sugar, as prunes, figs, musk grapes, &c. may be prepared in the above manner, and preserve nearly all their qualities, but the acid fruits acquire a disagreeable sharp taste by the concentration of the juices; some of them, however, may be kept advantageously in this way.

In the hottest countries the process of drying is often commenced by subjecting the fruits to the heat of an oven, after which they are exposed to the sun; some kinds of fruits are thrown into a weak ley, till their surface becomes wrinkled, when they are taken out, carefully washed in cold water, and afterwards dried in the sun: cherries particularly are treated in this manner. When the heat of the sun is not sufficiently great to evaporate all the water contained in the pulp of large, fleshy fruit, they may be cut in pieces and then dried; in this manner apples and pears are prepared for keeping.

But this method is neither speedy nor economical enough for such preparations as have but little value in commerce, and which can never supply, for domestic purposes, the place of those whole fruits, which may be easily preserved from one season to another: it is therefore customary to perform the drying either in stove rooms or ovens. In the first case, the fruits, after being cut, are placed upon hurdles arranged in rows in a chamber heated to 112°: in the second the fruits are put into an oven, from which bread has just been drawn: this is repeated if the fruits be not sufficiently dried the first time.

Some of the fruits referred to above, may be dried without being cut: of this kind are the tender pears, which cannot be preserved fresh through the winter; such as the rousselet, the butter pear, the doyenné, the messire-jean, the martinsec, &c. These are first peeled and then thrown into boiling water, after which they are put upon hurdles into an oven heated less than is required for bread: after an interval of three or four days the pears are again exposed to the same degree of heat, having been however first flattened between the palms of the hands; whence they have acquired the name of *pressed pears.*

Fruits prepared in either of the above ways are susceptible of fermentation upon being soaked in water, and they thus serve to make a cheap and useful drink.

In those countries where these fruits abound, the drying of them is commenced about the first of August, and those are made use of, which then fall from the trees; in autumn, when the harvest is gathered in, the soundest and finest fruits are carefully selected to be used fresh, whilst the rest are dried and preserved in a place free from moisture, to be employed in making drinks.

The herbage, which serves as food for domestic animals, can be preserved only by drying, and this in all countries is practised at the time of cutting. Fodder, which is imprudently stacked up whilst still damp, ferments, and the heat thus produced is sufficient to change the quality, produce mouldiness, and is sometimes even great enough to set the whole on fire.

There are some fruits, which may, by a few slight precautions be preserved throughout the year. The first of these precautions is, that of depriving their surface of all moisture before putting them up; and the second consists in keeping them in dry places, where the temperature will constantly be between 50° and 54° Fahrenheit; the third, in separating the fruits, so that they shall not come in contact; I have seen apples preserved in this manner eighteen months. It is necessary to be particular in selecting fruit for preservation; that only should be taken which is perfectly sound.

Wood and other portions of vegetables, and various animal substances are likewise preserved by drying; this process increases their hardness and renders them less accessible to the action of air, insects, and other destructive agents.

The process of drying is not confined to preserving fruits from decomposition: it furnishes the means of securing their juices unaltered for the formation of extracts of them.

When the juices of plants can be extracted by pressure alone, it is only necessary to evaporate these juices at a due degree of heat and in suitable vessels, till, being deprived of all the water which retained them in a liquid state, they are reduced to dryness. Evaporation, if continued for a long time at the temperature of boiling water, changes these juices a little; the albumen, which is contained more or less abundantly in all sweet fruits, is coagulated, and after this they are no longer susceptible of undergoing the vinous fermentation.

The must of grapes, operated upon in this manner, furnishes an extract called *raisiné*, which is an article of food both wholesome and agreeable, and which, when soaked in water, decays without producing alcohol. The fermentive power of this substance, may however be restored by mixing with it a little of the yeast of beer, as this repairs the loss, which the juices had sustained by heat during evaporation.

All the juices obtained from sweet fruits may be converted into extracts and thus furnish agreeable food; the quality of the extract varies according to the quantity of sugar contained in the fruit, and the care taken in the operation; when the juices are several times clarified, and evaporation carried on in a water bath, care being taken to stir the liquid to prevent its adhering to the sides, the color and taste of the extract or jelly obtained is far superior to that procured without employing these precautions.

The sweetest fruits, however, even the well ripened grapes of the south, contain a portion of acid, which when concentrated by evaporation, acts upon the copper boilers in which the operation is carried on, so as to form an acetate of copper: this by producing colics, would render the use of the extract dangerous, especially at the south, where the

principal article of food for children is the *raisiné*. In order to obviate this serious evil, an ancient and generally followed custom is observed: as soon as the must of the grapes begins to boil in the coppers, a bunch of keys is thrown in, and allowed to remain till the opetion is completed: these keys attract the copper and become covered with the precipitate thus formed, and nothing remains in the extract but the acetate of iron, which is not injurious.

I have observed that the juices of all succulent fruits might be converted into extracts, and thus preserved for use in the course of the year; but the greater part of these juices, when concentrated by evaporation, are so excessively acid as to be totally unfit for food, and they only form, when mixed with water, a very sour drink. In order to correct or conceal this acidity, these juices are boiled with an equal weight of sugar and thus made into syrups and jellies.

As it is of importance to be able to extract and preserve for domestic purposes, for pharmacy and for the arts, certain vegetable products which can be only very imperfectly obtained by mechanical pressure, recourse is had to other means; those liquids are made use of which will dissolve the wished for principles, and the solution is afterwards evaporated to dryness.

The fluid most generally employed for solutions is water; this dissolves the extractive matter, mucilage, sugar, and the greater part of the salts, and mixes with the mealy portions of plants; it may be applied cold or hot to the vegetables, or they may be boiled in it, according to the nature of the principle to be extracted; water will dissolve all that is soluble in them, and the extracts may be obtained from the solution by evaporation.

The resins, which are found so abundantly in some vegetables, are not soluble by water, and the place of this liquid must be supplied by alcohol, in which the plant must be digested; evaporation will separate the alcohol from the resin which it holds in solution. In order to avoid the accidents that might occur from the dispersion in the atmosphere of a very inflammable vapor, the evaporation must be so conducted that the dissolvent may be received into an alembic or close vessel.

In addition to the methods of preserving fruits by drying, and by reducing their juices to the state of syrups and jellies by natural or artificial heat, M. de Montgolfin has applied the action of the air pump with great success. I have tasted juices prepared and thickened in this manner, and I thought they were much superior to those that had been evaporated in either of the modes hitherto usually practised. I do not doubt that, when this method becomes better known, it will be generally adopted.

The Dairy—Butter Making; by W. G.

[FROM THE GENESEE FARMER.]

Every dealer in the article knows that the most decisive test which can be offered of the skill and neatness of the housewife, or the dairy woman, is furnished by the quality of the butter offered by her in the market. If it is firm, rich, marrowy, and of proper consistence throughout; free from all specks and impurities, perfectly divested

of the milk, and giving out that peculiar fragrance belonging to sweet and well made butter—the vender may be set down as one that understands her business, and the produce of whose dairy will always command the first price in the market. On the contrary, if the butter should be white, light and porous; full of particles of dirt, flies' legs, cows' hairs, and other nameless abominations; without being freed from the milk, and abounding in particles of the curdled milk from which the cream was taken—then the character of the dairy for neatness may be marked as suspicious, and prices must be arranged accordingly. The colour of butter is no infallible test of goodness, although that which is moderately yellow will, other things being equal, be generally preferred; but where the qualities above named are present, be the butter white or yellow, its excellence may be relied upon. The quality of butter is not however entirely depending on the skill or neatness of the maker—much must be allowed for the kind of pasture or other food allotted the cows. For pasture, clean turf which is mostly composed of white clover, and has been laid down for a number of years, will be found sweeter and better than any other; and of the roots, carrots will make the best coloured and flavoured butter. No cow, however, kept entirely on roots, will produce as good milk and butter, as if fed partly on these, and partly on fresh grass or hay.

Every dairy woman is sensible that to produce the greatest quantity and best quality of cream, milk should be kept at a moderate temperature, and that the cream should be taken from the milk before the latter sours, as if it is allowed to become thick, it is almost impossible to separate the curdled particles thus skimmed off from the pure cream, and these remaining in the butter, seriously detract from its appearance, and render it unfit to keep. After the cream has been taken from the milk, much of the goodness of the butter is depending on the temperature of the cream while churning. This point in ordinary dairies is not sufficiently attended to, or if noticed at all, only with reference to the speedy formation of the butter. Cream grows warm from churning, the rise being from four to six degrees, according to the time employed, and the state of the cream; consequently if the temperature of the cream is too high at the commencement of the operation, at the close it will be so much increased as to have a pernicious effect on the quality of the butter.

A few years since, by request of the Highland Agricultural Society of Scotland, a series of experiments was instituted by Mr. Ballantine, the owner of an extensive dairy, as to the proper temperature of cream for making butter, and the effects of different temperatures on the quantity and quality of the butter produced. Mr. Ballantine's Report, which obtained the premium from the Society, may be found in the "Library of Agricultural and Horticultural Knowledge," and is probably the best paper on the subject of making butter which has yet appeared. From Mr. B's. experiments, it appears that the thermometrical range at which butter can be obtained, extends from 45 to 75 degrees of Fahrenheit. A great number of experiments gave 60 degrees, as the temperature at which the greatest quantity of butter could be produced from a given quantity of cream; and 55 degrees of temperature in the churn just before the butter comes, as that which affords the best quality, giving a temperature of 51 to the cream at its introduction into the churn. Repeated churnings at this degree of heat, "gave butter of the finest quality and colour, the milk being completely separated from the butter, which when washed and made

up into rolls kept up for a fortnight without acquiring either smell or taste." Mr. Ballantine says—"Butter intended to be sent to the market, sweet, should be carefully gathered from the milk with the hand, and the milk squeezed out of it. It should then be put into cold spring water, and after being well washed, it should be made up into rolls with wooden flappers, and put into cold water to firm, but should not be allowed to remain longer than is necessary to firm it, as the water will hurt both its colour and flavour." The practice of *washing butter*, as putting the newly churned article into clear cold water is called, has we believe never prevailed to any considerable extent in the dairies of this country, whereas in England the practice is almost universal. The time it should lie in the water must be determined by the season of the year and the state of the butter, an hour being generally considered sufficient; and after being thus by washing and working completely freed from the particles of milk and of water, it is salted according to the notion of the dairy woman, and carefully put away for use or the market. Judge Buel condemns the use of water in the manufacture of butter, believing that it dissipates much of the fine flavor that gives to good butter its high value; yet in Orange county, which furnishes the best butter dairies in the state, and probably in the United States, it is a common remark among the dairy women, "give us cold *hard* water, and we will not fail in making good butter." We do not think the washing of butter has been properly tested in this country, or at least the results have not been reported; and that dairyman who should institute a series of experiments with regard to the making of butter in this and other methods, and the effect on its qualities for table use and keeping, and should faithfully record and report the same for some of our agricultural journals, would confer a great favor on a large portion of the community. Some experiments made on a small scale by Judge Buel certainly go far to prove the excellence of unwashed butter for keeping; and had he at the same time put down one or two pots of washed butter in the same way, it would have gone far towards determining the course to be preferred in its preservation.

For salting butter, experience has shown that in butter intended to be kept any time, one ounce of good fine salt to a pound of butter is the proper proportion; where it is not intended to be kept, less may be used, according to the taste of the maker. Some persons have recommended that to a pound of salt should be added four ounces of finely pulverized loaf sugar. We have tried this method, and found the butter admirable. Dr. Anderson says—"In Ireland, (and few countries equal to some parts of Ireland in the fine qualities of the butter,) the use of salt and saltpetre is recommended in the proportion of one ounces of fine rock salt, and one fifth of an ounce of saltpetre to twenty-eight ounces of butter." None but the finest and purest salt should be used for butter, as every extraneous matter found in the salt injures its quality, and produces a corresponding effect on the butter.

For preserving butter nothing more seems to be necessary than that the butter should be put down perfectly sweet and solid, in some vessel that is air tight, and then kept at a temperature between fifty-five and sixty or sixty-five degrees. The great secret consists in a low temperature, and the entire exclusion of air. Where considerable quantities of butter are to be put down, or packed, casks containing from 60 to 100 lbs. may be used. These should be made of white oak or ash, the wood to be boiled for three or four hours before working, and

thoroughly soaked in cold hard water before filling with butter. Into this the butter in good order should be well pounded, and if possible the cask or firkin should be filled at a single operation. At any rate butter of different qualities or colours should not be mixed together, as in one case the bad will certainly injure the good, and in the other the mixing of different colours produces that mottled appearance so abominable to the lover of good butter. If there is not butter enough to fill the firkin at once, make a strong brine, clear and pure, and covering the butter with this, let it stand until you have more to put down, when the brine may be turned off and the addition made. There should be a small space left between the head of the cask, when filled, and the butter; this space should be filled with strong well boiled brine, introduced through a hole in the head, stopped with a peg, which may be taken out occasionally for a few days, as sometimes the shrinkage of the butter from the cask will require the addition of more brine. When observation shows no more is required, the cask should be placed where the temperature will remain low, and the butter will be found of a good quality.

But where the butter is intended for family use, the best way we know of keeping it sweet, is to put it down in stone crocks or jars which will hold from thirty to forty pounds. The butter should be packed close and solid as directed for firkins, leaving a space of one or two inches at the mouth unfilled. Then make a strong brine, carefully boiling and scumming it, and fill the jar with it. Place the jars in a cool sweet cellar; cover them carefully and securely to prevent any dirt getting in; examine them occasionally to see that the butter is covered with brine, and that the brine remains sweet and good. If a scum rises on the brine, turn it off and boil it, putting in salt if necessary, and scumming it until perfectly pure, when it may again be turned on the butter. Butter in this way has been kept nearly two years perfectly sweet and good; indeed, where coolness is desirable, nothing is better adapted to promote it than stone. A few years since a friend of ours, as an experiment, filled a small firkin with butter in June, headed it up solid, and threw it into his well, where it remained till November, and when taken out was as sweet and fresh in taste as when put in. Perhaps, where the means existed of forming a vat in the dairy-house, and throwing into it a stream of cold spring water, this method of keeping butter in water might be advantageously adopted, as the water could not touch the butter, while it would keep it cool, and exclude the air at the same time. The making of butter is daily becoming a matter of more interest in this country; and any methods which shall add to the quantity without impairing its quality, or which shall ensure uniform excellence, will be hailed with satisfaction by numbers who are beginning to turn their attention to this branch of domestic economy. W. G.

Summer Pruning.

[FROM THE GENESEE FARMER.]

We are advocates for summer pruning, both from experience and philosophy. And we invite those of our readers who are wedded to the old practice of pruning at other seasons, to examine the reasoning in favour of our practice, contained in the following extract,

which we make from the essay on useful and ornamental planting, published by the society for the diffusion of useful knowledge. It contains interesting facts in vegetable physiology, and indicates the propriety of early fall planting.—*Cult.*

"Every individual leaf of a tree is furnished with its own particular series of vessels for the course of the sap, and not only prepares and elaborates the sap for the increase of substance of its own branch, but also for the parent stem and root. Hence it is that trees regularly furnished with branches from the base upwards, have more tapering stems than trees with branches confined to the upper half of the stem, the increase being equal, from the point where the branches begin, downwards to the root; or, in other words, whatever length of stem from the root upwards is destitute of branches, that part of it, from the period of losing them, increases in size equally throughout. [Hence the importance of taking off the lower branches of trees intended for timber: and of taking out the centre shoot of fruit trees, when they have attained a sufficient height to form a top—the object in one case being to obtain a straight clean bole, for timber, and in the other a low wide-spreading top for fruit—a straight lofty tree giving the most and best timber, and a low and spreading one giving the most and best fruit.] Without a just knowledge of this principle in the economy of vegetable life, the important process of pruning in the culture of forest trees, cannot safely de performed by the forester. That the sap never ceases wholly to move, is evident in the increase of the roots and buds during the winter, when the plant is leafless; but its descent is particularly distinguished for greater force and activity at two periods of the year, spring and mid-summer. The ascent in the spring is the strongest, and continues until mid-summer, gradually diminishing in force as the new branches and leaves are perfected. This generally takes place about the beginning of July, when an apparent cessation of ascending motion in the ascending sap immediately succeeds, and continues usually for the space of a fortnight or three weeks—[during this apparent time of cessation is the proper time to prune according to the age of the plant and the state of the weather. A second ascent of sap, and growth of shoots, now take place, but with diminished vigour; unless from accident, disease or unfavorable weather, the spring growth has been checked, and the first flow of sap prevented from being exhausted in the production of branches, leaves and blossoms. It is worthy of remark, that those shoots which form fruit, flower or seed buds, have seldom, if ever, any second growth; but remain without increasing in length until the next spring. The mid-summer growth is almost always confined to those branches which carry wood buds only. *After the second growth is completed, the effects of the descending sap in the formation of new bark is apparent in the healing up of the wounded parts of the stem and branches, which now proceeds with more activity than during any other season of the year.* Branches pruned off smooth at the stem, though the latter be healthy, young, and containing a perfect pith, *before or shortly after the completion of the mid-summer growth, do not produce shoots from the edge of the wounds caused by their removal, which always happens, more or less, when pruning is performed on free growing trees after the fall of the leaf, and before the full developement of the spring shoots and leaves.* It is to be observed, however, that the reproduction of branches from the edges of a wound is greatly assisted by leaving a portion of the branch or shoot on its parent branch or stem."

Planting Cut and Uncut Potatoes; J. B. B.

[FROM THE GENESEE FARMER.]

Mr. Tucker,—As you requested in the 22d No. of the Genesee Farmer that you should be gratified if some of your readers would make experiments on *whole* and on *cut* potatoes, for the purpose of ascertaining the greater produce, I take the liberty to send you the result of an experiment made by my father a few years since.

Half of a piece of land was planted with *whole*, and the remainder with *cut* potatoes. The result was, that the half planted with whole potatoes yielded a good crop, or double that planted with cut potatoes. In the 20th No. of the Farmer I noticed an article on the "culture of potatoes," giving a like experiment with the same result. In both instances the seasons were *dry*, which will probably account for the difference of the products. Therefore it is evident, that on a light *dry* soil, it is best to plant whole potatoes, as they furnish more nourishment and moisture, giving the plant a better start, consequently it will be sooner above ground, and less liable to be affected by the drought. But on a *moist* soil, cuttings are unquestionably as good, and will produce as great a crop. It has been my father's practice to select sizeable potatoes for seed, cutting them into pieces containing three or four eyes each, and planting usually two pieces in a hill. The produce has been from 300 to 600 bushels per acre, depending mostly on the season—a good season giving almost invariably a good produce. It ought not to be forgotten, that the experiments alluded to were decided in favor of *whole* potatoes if the season was *dry*. Therefore the question arises, "Should your father plant *whole* potatoes, whether the season is *good* or not, (that is to say, *dry*, *wet*, or about right,) would he not *always* have a good crop?" Yes, I believe he would, if he managed the *whole culture* providently, as well as to put in the *whole potato*, and nothing out of the common course of things happened. "Well, then, try to have him make one more experiment, and perhaps he will be induced to plant *whole* potatoes afterwards instead of pieces. Then he will be prepared for *dry* seasons, and if *wet*, equally as good will be his crop—if a good season, better, and here I stop."

Yours, &c. J. B. B.

Ledyard, June, 1836.

Skinless Oats.

[FROM THE FARMER AND GARDENER.]

Having seen several statements in the agricultural papers, detailing the results of experiments in the culture of the Skinless Oats, I am induced to submit the following for publication.

Last spring I obtained four quarts of these oats, which I sowed thinly on three separate pieces of ground, amounting in all to three eighths of an acre. One third of the land was in a low situation, on a stream, and on the day I intended to harvest the crop there was a heavy fall of rain, which entirely destroyed it. From this portion, therefore, I reaped nothing. From the remaining quarter of an acre, I gathered five bushels, being at the rate of twenty bushels to the acre.

The land, however, though of a good quality, was by no means occupied with the growth, as my object was rather to obtain the greatest possible product *from the seed*, than from the acre. The season was very dry from the time the oats came into flower until they were ripe, which naturally shortened the crop. The weight of the oats was about forty pounds per bushel.

Under favourable circumstances, I suppose thirty or forty bushels may be grown on good land to the acre; but I regard it as next to impossible to reap sixty or eighty fold, which has been intimated by some persons. The value of this variety in a threshed or ground state, compared with the common oats, is, measure for measure, about as two to one; and, divested as it is of the husk, it would be rather unreasonable to expect it to produce a greater number of bushels, or even as many, from a given quantity of land.

This spring I have had four bushels sown on as many acres, which will be an experiment on a sufficiently large scale to establish its probable productiveness with some precision. I will communicate the result when ascertained. A FARMER.

Virginia, April 28, 1836.

Raising of Chickens.

[FROM THE NEW-ENGLAND FARMER.]

Sir:—The subject upon which I am about to write, may excite a smile upon the faces of some, but if I succeed in rendering even a small service to any, the object will be accomplished. He thinks he may throw out a few hints that may be useful in increasing the number and quality of an animal that is so universally made to conduce to the luxury of the table, and the proper sustenance of the human system.

In the first place, then, I would advise those interested to procure for themselves a good breed of fowls. The pair I sent you last fall, I consider nearer to perfection, in all respects, than those of any other breed. I call them the Ostrich breed, from their strong resemblance when about half grown to that famous bird. They are large—their habits are very domestic—they lay well—set well—hatch well—and nurse well—and their flesh is very delicious. Have a well sheltered place for them to roost in, with a sufficient number of places for them to lay their eggs. Let your box be about a foot wide, and about 15 inches high—with partitions about ten inches apart. The box to be enclosed on every side, with the exception of about six inches of the front, and that the upper part—place the box enough against the wall to prevent the depredations of children, &c. The hen is fond of a small aperture to creep into for the purpose of laying. At the proper setting season remove your eggs carefully every night into a safe place, to prevent their freezing or getting much chilled, which will prevent their hatching. No "nest egg" is necessary upon this plan. The nest egg, in my opinion, seldom produces a chicken, early in the spring because of its generally having been chilled.

While the laying business is very brisk, prepare as many setting boxes as you may think fit. Let them be about eighteen inches square, enclosed on every side, with a loose cover for the top, not so tight as to shut out the air; put hay or straw enough in to form a nest,

in which you may place about thirteen eggs—put the hen in the box and lay on the cover, with a weight sufficient to prevent her from knocking it off. You may confine her without any injury for three or four days, at the expiration of which time you may take off the cover, and leave her until she hatches—which almost every body knows, will be in exactly twenty-one days from the time of commencement. The advantages of the large box are these: It gives room to move round without breaking the eggs, and the little ones a chance of coming out without the danger of their running away. When hens set on the ground or in unprotected places, they are subject to be interrupted by animals, and when two or three chicks are strong enough to run they leave the nest, and the mother, following them, leaves the half hatched to perish. This is a great loss of time, eggs, and chickens.

As the warm season advances, always endeavour to set three hens at exactly the same time—they will consequently hatch at the same time, and you can then divide the chickens of the three between two, and they can generally take care of more than they can well hatch, if properly managed.

Make as many moveable coops as you think necessary, with a shed roof and slats in front, which place in some safe place from hogs in the sun—the sun is very invigorating to young chickens. The hen and chickens should be fed with corn meal wet with water or milk, three times a day, and watered at least once. The hen should be kept confined in this way, at least for a week, to prevent her from leading them into the wet grass in the morning, which is very prejudicial to their well being. At the expiration of that time, if the weather is good, you may place a block under one corner of the coop and let them out; at night, they will return and take possession again, when you should take away the block, and keep them in again until the dew is off the grass. If the weather is unpleasant keep them in all day.

When the chickens acquire more size and strength, they should be fed in what is called a 'chichen feeder,' which is a covered enclosure six or eight feet square, with slats just close enough together to admit the chickens, and exclude the older fowls.

Each of my hens last year raised to perfection, on an average, at least twenty chickens. They each raised two broods, and several hatched three times.

When the chicks are taken from one hen and given to another, the one from which they are taken should be confined for about a week, and then set at liberty, when she will soon commence producing another family.—*Ohio Far.*

On the use of Camphor in Horticulture.

[FROM THE HORTICULTURAL REGISTER.]

Camphor is dissolved in alcohol until the latter is saturated; the alcohol is then put into soft water, in the proportion of two drops to half an ounce. Withered, or apparently dead plants, put into this liquid, and allowed to remain there from two to four hours, will revive, if they have not been completely dead before being put in.

On the Propagation of Vines.

Cuttings are made from one and a half feet to two feet in length, and all the buds removed from them except one at the upper extremity.

The shoot is then laid in the soil, to the depth of six inches, the end having the bud being brought up to the surface. A vigorous shoot is made in the first year; and in the second year the plants, if not removed, will bear fruit.

On the Preservation of Grapes and Plums.

At Berlin, grapes are preserved by cutting the bunch when ripe with about one foot of the wood, above and below the footstalk. The ends of the wood are dipped in hot pitch, to keep in the moisture, and the bunch is then hung up in a dry place. The Quetch plum is preserved till March by the following method:—"Gather them when perfectly ripe and dry; put them in a glass jar or bottle, closely tied up, and pitched so as to exclude the air, and then bury them in dry soil seven or eight feet deep, so as to be out of the reach of any change in temperature or moisture. When taken out, they must be used immediately.

On Shortening the Tap Roots of Trees.

The following principles are laid down:

1. An injury to any one part of a plant occasions a change in the natural developement of the other parts.
2. Roots and stems are always in a certain degree reciprocally proportionate to each other.
3. The tap root does not form a part of every plant; but, where it does so, it is an essential part of that plant.
4. By shortening the tap root, one or other of the following consequences will result:—Tender plants will be more easily destroyed by severe weather; all sorts of plants by dry weather, from their roots not being so deep in the soil: the wood of the timber trees will be less durable, their trunks shorter, and their heads broader and less high; and fruit trees will blossom earlier and more abundantly, and their fruit will be larger and better flavoured.
5. To transplant trees without injuring their roots, is difficult in porportion to the age of the tree, and the extent of the roots.
6. All transplanting ought to be done when the trees are young, and then only can the roots be cut without injury.
7. When tho tap root descends into a bad subsoil, it brings on diseases in the tree.

The general conclusion which the writer draws, is, that where the largest and best timber-trees are an object, the seeds should be sown where the plants are to remain, and, consequently, the tap root never injured; but that, in fruit trees, it should always be shortened, to cause them to be spread out horizontal roots near the surface, among the nutritive soil.—*Transactions of the Prussian Gardening Society.*

Progress of raising Silk in the West.

[FROM THE SILK CULTURIST.]

We copy the following letter from the Palladium published at Richmond, Wayne County, Indiana, and would recommend it to the especial notice of our readers in the West. It is from David S. Porter, Esq., our agent at Cincinnati, Ohio, to a gentleman in Indiana, and contains much valuable information in relation to the cultivation of the mulberry, and the culture of silk. Mr. P. is a gentleman of intelligence, and integrity, and having located himself in the principal city of the West, expressly for the purpose of promoting the introduction of this new branch of rural economy in that region, we cannot

avoid anticipating important and salutary results from his exertions and labours.

Having the fullest confidence in the knowledge and skill of Mr. P., we would here take the liberty of suggesting to such gentlemen in the West as may be desirous of obtaining information on the subject, seed, trees, machinery, &c., the expediency of making application direct to him, as they will receive their answer, and have their orders filled much sooner than through this office, and on terms equally reasonable and satisfactory.

Mr. Quiner: Sir—Yours of the 1st inst. has this moment come to hand. I am gratified to hear of the success of yourself, or any other silk grower of the West. There is not a shadow of doubt on my mind but that the silk business is destined to become the greatest business in this country, and I think that in ten years it will be as much a staple of the farmers of the middle and western States as cotton is of the southern. I have no fear as to the practicability of raising two or even more crops in this section of country every season; in fact, by taking proper care, a new family of worms may be hatched out every fortnight, and fed without difficulty upon the Chinese tree, as it constantly puts out new leaves when deprived of the old ones, so that tender leaves for the young worms may be had the whole season. In this way, you will perceive that we may carry on a constant business, and not confine ourselves to one or two crops as our eastern brethren, with their less luxuriant soil and less congenial climate, are obliged to do; two crops, I think, are about as many as will ever be raised in the east, but I may be mistaken.

Chinese mulberry seed I have not, and neither have I been able to obtain it. By letters from the east I learn that the seed which has been brought out, has not come up well. if at all: for one I have but little confidence, as yet, in Chinese seed. I have never been satisfied yet that the seed would produce the same tree; many experiments have been tried in France; some are said to have succeeded, but more to have failed. I think we must depend upon propagating by cuttings and layers, for which the tree seems admirably adapted. White seed is not yet in market, but I expect some as soon as it can be obtained. I suppose, from what I can learn, that it will be held at about eight dollars the pound. I hope to have some in the course of two weeks or so.

[I would here remark, that it has been satisfactorily ascertained that seed planted during the month of August, by proper care and attention, will produce plants the height of six inches by fall, and as it is best to cut off all seedlings two or three inches from the roots the succeeding spring, it will be seen that those trees planted in May will have but little advantages over those planted in August. It would be advisable that persons, in the neighbourhood of Richmond, intending to embark in the culture of silk, should purchase this year's seed from Mr. Porter, to sow in August. They will thereby save one year's growth of the mulberry. Orders to be addressed, *post-paid*, to "D. S. Porter, Agent of the Silk Culturist, Cincinnati, Ohio."—Q.]

Your experiment of budding the Chinese on the wild or native tree does not strike me very favourably. We have tried it on the White mulberry at the east, and do not find that it succeeds any better than on its own stock. The ripe wood of the Chinese tree will endure as long and severe cold as either the native or white; it is only the green succulent sprouts that are injured by the frost, and while the tree is young and luxuriant, we must not let it grow too late in the fall, but check its growth by withdrawing cultivation in time to let the young

wood ripen. Independent of there being no advantage in grafting, as to hardiness, there will arise a disadvantage when the grafted trees come to bear seed. The tree will be hibrided, and will not, of course, produce trees like itself from the seed, and thus we shall get our mulberry trees mixed together until, like the peach, apple, &c,, we shall not be able to tell what seed the tree will produce.

I have a few thousand Chinese trees yet for sale, as I suppose; though there is a possibility of a failure, as I have had rather unfavourable accounts from my nursery. But I am still receiving orders, in hopes of being able to supply. My price is tweny-five dollars per hundred. I have not taken any orders for less than one hundred trees. I add transportation, which will probably be two or three dollars per thousand.

I am much rejoiced to learn that there is one silk grower in this region who sees his interest in this business. I find it difficult to induce farmers who are disposed to raise silk, even to reel it, and I hardly dare suggest the propriety of their making it into sewing silk. But I think no man, who will sit down calmly and count the cost, can hesitate long in coming to the conclusion, that every farmer ought to raise and reel silk, and at least one or two or more in every village ought to make sewings. I say one or two ought to make sewings, because this is a nicer operation than any other through which the silk passes. It is more difficult to make good sewing silk than to weave good silk cloth; that is. it requires more judgment. A little practice will make a good reeler out of any American woman, and good machinery will make good silk cloth almost alone, for the strength of the thread, when compared with any other kind, gives a decided advantage to the weaving of silk; but to practice and good machinery, judgment must be added, to make good sewings, and therefore I think it should be confined to fewer hands.

The manufacture of sewing silk, alone, will, ere long, be a stupendous business in this country. In Hartford, (Conn.) there is sold annually, by the merchants, about forty thousand dollars worth of this article alone; how much. then, must be sold in Cincinnati, with three times the inhabitants of Hartford, and probably six times the business? It would be certainly safe to say one hundred and twenty thousand dollars worth. And why should we go to France for all this, *when Richmond, (Ia.) might supply the whole of it?* To a sceptic this will appear extravagant, but time will show.

Should you want of me either seed or trees, it would be well to apply soon. Yours, respectfully,

DAVID S. PORTER.

Cincinnati, July 5, 1836.

Mr. E. B. QUINER, Richmond, (Ia.)

On a method of making elastic Walks for Gardens.

[FROM THE GARDENER'S MAGAZINE.]

Many things have been invented to render the body of man easy and comfortable; and, of these, the improvements which derive their advantages from elasticity appear to be preferred: the Indian-rubber shoes, and the water-proof elastic hats, I think, are proofs of this. The object of this paper is to carry the employment of elasticity a little farther, and to introduce it into gardening, if it is not already in use. Among the various methods of making walks pointed out in your *Encyclopædia of Gardening*, I can find none that accord exactly with those that I would recommend in this paper; namely, *elastic walks*. Their object is to add pleasure to the flower-garden, for in many

gardens the walks are of such a nature, that one would almost think they were intended to make the persons walking on them do penance in the temple of Flora, instead of affording ease and pleasure while contemplating the cultivated beauties of the vegetable kingdom; but I believe, if the plan be adopted which I shall presently recommend, the fairest flowers of creation will linger with delight among the ambrosial sweets of the flower garden, and walk with as much softness and comfort as if on a Brussels carpet.

The method I would recommend to make elastic walks is this:—Remove the earth one foot deep; and, if found necessary to have a drain, make it in the centre or side of the walk. After the drain is finished, fill the bottom of the walk with small stones to the depth of three inches or four inches; then fill up the remaining eight inches with flow-peat, or decomposed moss (Sphágnum.) This kind of peat is light and spongy; it resists putrefaction, and remains longer unimpaired in its form than any other kind of peat. After it is put into the cradle of the walk, it must be levelled with the spade, and trodden upon with the feet, so that no inequalities may appear on the surface: afterwards the roller should be brought over it. After this treatment, it will have become more compact, and will have sunk a little: this will allow room for two inches or three inches of fine engine ashes to be laid above it. The ashes that have undergone two burnings are the best for colour, having a close resemblance to gravel. After distributing the ashes equally over the surface of the peat with a rake, they must be rolled over and over, until they form a kind of cake above the peat, and then the walk is finished. It may be thought that walks of this nature will be damp, but I have always found them as dry as those that are made with stones and gravel; and they are strong enough for all the ordinary wheeling that is required in the flower-garden. I have no doubt that the valetudinarian would derive great comfort from such walks; and if they tend to make the flower-garden a greater source of pleasure, I shall have gained my object.

Who will not plant the Locust Tree.

[FROM THE GENESEE FARMER.]

A Mr. Hale, of Westhampton, (Mass.) obtained last year for thirteen locust trees, delivered at the river in West Springfield, fifty cents per cubic foot including all the limbs, except those quite small. The trees measured three hundred and six feet, and amounted to one hundred and fifty-three dollars; thus producing one hundred and fifty-three dollars for less than two and a half cords of wood. Let us make this fact the basis of a little calculation. The locust will thrive abundantly on favourable soils when planted a rod apart, or one hundred and sixty on an acre. Mr. Hale's trees averaged him eleven dollars and seventy-two cents a tree, which for an acre of trees of the same size would bring one thousand eight hundred and seventy-five dollars and twenty cents. It has been estimated that six locust trees of twelve years old will produce a cord of wood, and in many instances they have far exceeded it; but, to be on the safe side, we will take six and a half and let them grow eighteen years instead of twelve, and then the avails of the acre will exceed one hundred dollars a year for the eighteen years. If this is not a handsome profit we know not what is; and there is this additional circumstance attending it; locuct timber will not fall in price, as the demand, from the nature of the case, must continually increase. Then plant the locust by the way-side, fill up the vacancies in your wood-lands with it—remembering that every one that grows puts into your pocket one hundred per cent per annum.

G.

PART III.

MISCELLANEOUS INTELLIGENCE.

Save Your Soap Suds.—It is not perhaps generally known that soap suds form one of the most valuable appplications to a great number of vegetables, and that by allowing them to be thrown away, a serious loss to the garden and fruit orchard is sustained. Applied to melons, squashes and cucumbers, it materially aids their growth, besides having a good effect in helping to banish the multitude of worms, bugs and flies that harbour near them, and feed upon them. It is one of the best remedies for plants attacked by the plant louse, and would annually save large numbers of turnips, cabbages, &c. from falling a prey to this minute but formidable insect, were it sprinkled over them instead of being thrown away. Where these creatures have seized upon the extremities of young grafts, soap suds thrown upon them with a syringe will soon expel them without injury to the tree. If you have no other use for your suds, heat it, and uncapping some of the ant hills that disfigure most farms, pour it upon them; experience will show that these insects are not fond of soap.—*Gen. Far.*

Ridging the Ground for Melons.—I wish to inform my brother farmers that I have tried the plan recommended in the Genesee Farmer for raising watermelons. I dug a ditch three feet wide and one foot deep, filled it with green horse stable manure, trod it down, and replaced the earth. The soil was black loam mixed with clay; I added sand to it in each hill. The experiment succeeded well. I had as fine melons as I have ever eaten. S. GRIGGS.—*Ib.*

To Destroy Worms on Trees.—Gentlemen: Please to give the following remarks and observations a place in your instructive Long-Island Star, and it may lead to greater advantage to the farmers, and comfort to the lovers of fruit. I have discovered, beyond a doubt, an antidote for the insects that destroy fruit trees at the roots, which is cheap and simple, and can be attended to by every farmer and gardener, in the country, viz: make a recess around the trees, of sufficient depth to contain from a peck to a half bushel of wood ashes, such as are used to make soap, then fill the place with soft water, and when it is nearly subsided haul on the loose earth, that was removed to give place to the ashes. This should be done between the 8th of May, and 15th of Sept. in the several States north of the Potomac, and those States south of that line, between the 5th of April, and 12th of October, and must be repeated every year, until there is not a trace of an insect left. The ashes so deposited will hold their virtue during the growing season, and every rain will produce a fresh supply of liquid, which is certain death to the bug or worm, that falls in contact with it, and at the same time will be of great benefit to the health and growth of the tree.

With great respect, &c. T. H. D.

To fatten Fowls or Chickens in four or five days.—Set rice over the fire with skimmed milk, only as much as will serve one day. Let it boil till the rice is quite swelled out; you may add a tea-spoonful or two of sugar, but it will do well without. Feed them three times a day, in common pans, giving them only as much as will quite fill them at once. When you boil fresh, let the pans be set in water, that no sourness may be conveyed to the fowls, as that prevents them from fattening. Give them clean water, or the milk of rice, to drink; but the less wet the latter is when perfectly soaked, the better. By this method the flesh will have a clear whiteness which no other food gives; and when it is considered how far a pound of rice will go, and how much time is saved by this mode, it will be found to be cheap.—*N. E. Far.*

A solid lump of gold, two hundred and fifty-nine penny-weights, estimated at two hundred and forty-one dollars, was taken out of a lead mine, near Dahlonega, (Ga.) The mines in that neighborhood are said to be yielding a better profit than they have done for years.

Beat this who can.—A Pawtucket girl, not ten years of age, lately planted two acres of land with potatoes in one day. What a wife for a farmer!—*Woonsocket Far.*

Sick Headache.—A tea spoonful of finely powdered charcoal, drank in a half tumbler of water, will in less than fifteen minutes give relief to the sick headache, when caused by a superabundance of acid on the stomach.—*New. Herald.*

Hot Water is of great efficacy in removing pain occasioned by crushing the finger, for instance, in hastily shutting a drawer or door. It also prevents the nail from turning back.

Remedy against Ants and Spiders.—Mr. Clutterbuck, jun. of Watford, washed the walls of his hot house with a painter's brush dipped in a solution made of four ounces of corrosive sublimate in two gallons of water; and since that application, neither the red spider against which the remedy was employed, nor ants have made their appearance.—*Dom. Ency.*

Marble Cement.—An important improvement, which has been for several years in progress, is about being introdueed to the more general notice of the public, and believe into extensive use for building purposes. It is a composition or cement, of which the principal ingredient is marble or lime stone, which, when applied to the inner or outer walls of buildings, presents the appearance of polished marble, of the various hues and qualities which distinguish the beautiful material imitated. What would be thought of a magician who possessed the power of changing the sombre brick and stone walls of the buildings of a city, in one week, into substances resembling the most beautiful Grecian, Italian, Egyptian or Verd Antique marble, or porphyry, like the rock of Gibraltar? Yet all this may be done by this invention of a humble citizen, of Orange County, in this State. This cement has been sufficiently tested by experiments on buildings, to satisfy practical men of its decided superiority over any other cement, stucco, or other hard finish for walls, hitherto known. In our next number we expect to be able to furnish the public with some interesting particulars on this subject; and in the mean time we can state, that a company has been formed, in this city, to carry on the operations connected with the manufacture of this new cement, and its application to buildings.—*N. Y. Far.*

American Vine.—The expedition to the Rocky Mountains found on the borders of Arkansas, near the eastern side of the great desert, hundreds of acres of the same kind of vine *(vitis vinifera)* which produces the wines of Europe. These vines were growing in a wild state and were surrounded with hillocks of sand, rising to within 12 or 18 inches of the end of the branches. They were loaded with the most delicious grapes, and the clusters were so closely arranged as to conceal every part of the stem. These hillocks of sand are produced by the agency of the vines, arresting the sand as it is borne along by the wind.—*Hort. Reg.*

Lightning Rods —Professor Fansher of Yale College, says:—In a dry atmosphere its influence extends to from 30 to 40 feet. In a damp one from 20 to 25 feet. When it rains profusely, from 15 to 20 feet. From this statement it will be obvious that conductors should always be erected with reference to the most watery state of the atmosphere.—*Ib.*

Garlic.—A writer in a Philadelphia paper states that when the fall fever raged violently in the neighbourhood of a canal, then in a state of progress, numbers of the workmen engaged on it eat plentifully of garlic, and wholly escaped, while those who abstained from the use of this article were severely afflicted by the disorder.—*Ib.*

The Bee Miller.—The following method of destroying a very pernicious insect has been recommended, and is at least worth the trial. To a pint of sweetened water (sweetened with sugar or honey) add half a gill of vinegar; set this in an open vessel on the top of the hive, and at night, when the miller comes to his work of destruction he will prefer this composition, and diving into it, immediately drown.—*Ib.*

STATISTICS OF

The South-Carolina Canal and Rail-Road Company.

In our number for February, we were induced to lay before our readers a statement of the affairs of this Company, which, though highly promising of its prosperity and usefulness, is still further exemplified in the following tables lately put forth, under the signature of their President and Secretary, and which we consider our duty to publish for general information.

STATEMENT *of the Number of Passengers conveyed upon the Rail Road, the number of Bales of Cotton brought down upon it, with the amount received from Freight and Passage, from Jan. 1st to June 30th, 1836.*

	PASSAGE.									FREIGHT.							
	UP.			DOWN.			UP AND DOWN.			UP.		DOWN.		UP&DOWN		TOTAL AMT.	
	No. Pass.	*Amount Pass.*		*No. Pass.*	*Amount Pass.*		*No. Pass.*	*Amount Pass.*		*Amount Freight.*		*Amount Freight*		*Amount Freight*		*Freight & Pass.*	
JANUARY,	1,189	4,181	88	1,466	4,407	64	2,655	8,589	52	4,867	14	2,061	01	6,928	15	15,517	67
FEBRUARY,	1,121	4,081	78	2,407	8,719	58	3,528	12,801	36	8,487	96	5,040	27	13,528	23	26,329	59
MARCH,	1,623	6.334	82	1,587	5,399	69	3,210	11,734	51	12,179	05	4,057	59	16,236	64	27,971	15
APRIL,	1,620	5,532	87	1,907	5,666	52	3,527	11,199	39	9,892	41	3,284	41	13,176	82	24,376	21
MAY,	2,499	9,880	08	2,181	6,307	81	4,680	16,187	89	9,247	47	3,557	18	12,804	65	28,992	54
JUNE,	2,454	11,302	96	1,957	5,587	45	4,411	16,890	41	7,231	97	1,287	67	8,519	64	25,410	5
TOTAL,	10,509	41,314	39	11,505	36,088	69	22,011	77,403	08	51,906	00	19,288	13	71,194	13	148,597	21
Monthly Average,	1,751	6,885	73	1,917	6,014	78	3,668	12,900	51	8,651	00	3,214	69	11,865	69	24,766	20

				Number of BALES OF COTTON *received in Charleston from the different Stations on the Rail Road, from Jan. 1st to June 30, 1836.*						
	Departures.	*Arrivals.*	*Total.*	*Hamburg.*	Aikin	Black ville.	Mid-way.	Bn'ch ville.	Way	Total
JANUARY, - -	47	39	86	695	261	126	212	117	14	1425
FEBRUARY, -	53	48	101	1,082	654	503	423	179	72	2913
MARCH, - -	63	57	120	1,974	411	271	397	262	53	3368
APRIL, - - -	58	51	109	2,366	216	19	67	136		2804
MAY. - - -	56	51	107	2,971	172	16	12	55	6	3232
JUNE, - - -	50	51	101	823	31		46	24		924
Total, - - -	327	297	624	9,911	1745	935	1157	773	145	14666
Monthly Average,	54	50	104	1.652	291	156	192	129	24	2444

HENRY RAVENEL,
Sec'ry & Treasurer So. Ca. & R. R. Company.

CHARLESTON, S. C. JUNE 30, 1836.

DR. **SOUTH-CAROLINA CANAL & RAIL ROAD COMPANY.** **CR.**

1836.	To State of South-Carolina,	$	100,000	1836.	By Cash,	$	6,757 42
June	To Interest on State Loan,		20,723 55	June	By John King, jun. Chief Agent, for balance due by Agents,		11,801 11
30.	To Bonds payable,		3,500	30.	By Post Office Department,		6,666 66
	To Individual Loans,		18,390		By Eason & Dotterer, for advance on Machinery to be deliv'd.		1,761 63
	To Bills payable,		67,511 62		By Louis T. Dod, for Engine, &c. sold him,		7,486 88
	To Custom House,		792 06		By Robert Childs,		93 75
	To Dividend No. 4,		1,104		By Wm. Robertson, Jun. for Cash in his hands to pay Bills,		169 50
	To W. C. Molyneux,		5,829 43		By M. W. Baldwin,		75 00
	To Individuals for articles furnished, and to Officers' Salary,		7,955 78		By Rogers, Ketchum & Grosverner, for Drafts accepted on account of Machinery not yet received,		2,489 34
	To Wm. H. Bell,		20				
	To amount due on Pay-Rolls,		7,381 28		By amount due on Sales of Lots at Aikin,		2,794 80
	To amount due on Bills for Wood, Lumber, Embankment, &c.		14,722 40		By Balance,		245,121 53
	To amount due on Interest on Bonds, Loans, &c.		837 50				
	To amount due to Mrs. Belser, for Lot on Charleston Neck,		450				
	To Dividend of $3 per Share, for the last six months,		36,000				
			285,217 62				285,217 62
	To Balance, being the total debt of the Company this day,		245,121 53				

The Debt of the Company, June 30, 1836,	$ 245,121 53	
" " Dec. 31, 1835,	174,622 11	
The increase of the Debt in the last six months,	70,499 42	
The increase of Property in the last six months, (as estimated by a Special Committee of the Board,) consisting of additional Machinery, Negroes, and Lands purchased during this time, and the amounts expended upon Embankment, alteration of the Inclined Plane, and other Improvements of the Road,	70,962 79	
Showing an increase of Property greater than the increase of Debt,	$ 463 37	
The income from Freight, Passage, &c. for six months ending June, 30, 1836,	$ 148,939 70	
The current expenses during same time,	112,476 33	
Leaving as Divisible,	$ 36,463 37	

HENRY RAVENEL,
Secretary & Treasurer.

CHARLESTON, S. C. JUNE 30, 1836.